

CCD-TR808E

RMT-508

SERVICE MANUAL

AEP Model



**video Hi8
Handycam**

FL MECHANISM

Remote commander is available as a unit. But as individual parts the battery case lid of commander is only available.

**For MECHANISM ADJUSTMENTS, refer to the
"8 mm Video MECHANICAL ADJUSTMENT
MANUAL II" (9-972-705-11).**

SPECIFICATIONS

Video camera recorder

System

Video recording system	Four Rotary heads, Helical scanning FM system
Audio recording system	Four Rotary head, Helical scanning FM system
Video signal	PAL colour, CCIR standards
Usable cassette	8 mm video format cassette (Hi8 or standard 8 mm)
Tape speed	SP mode: Approx. 20.051 mm (13/16 in)/second LP mode: Approx 10.058 mm (13/32 in)/second
Recording time	SP mode: 1 hour and 30 minutes (E5/P5-90) LP mode: 3 hours (E5/P5-90)
Playback time	SP mode: 1 hour and 30 minutes (E5/P5-90) LP mode: 3 hours (E5/P5-90)
Fast-forward/rewind time	Approx. 8 min. (E5/P5-90)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (black and white)
Lens	Combined 10 x power zoom lens f=6.2 to 62.4 mm (1/4 to 2 1/2 inches) 45 to 450 mm (1 13/16 to 17 3/4 inches) when converted into a 35-mm still camera F 1.6 to 2.9 Filter diameter 52 mm (2 1/8 inches) TTL autofocus system inner focus wide macro system
Colour temperature	Auto, HOLD, Indoor $\approx$ 3,200 K, Outdoor $\approx$ 5,800 K

Minimum illumination	3 lx (F 1.6)
Illumination range	3 lx to 100,000 lx
Recommended illumination	More than 100 lx
Aperture correction	Auto

Input and output connectors

S video output	4-pin mini DIN Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative Chrominance signal: 0.3 Vp-p, 75 ohms, unbalanced
Video output	Phono jack, 1 Vp-p, 75 ohms, unbalanced, sync negative
Audio output	Phono jacks (2: stereo L and R), -7.5 dBs, (at load impedance 47 kilohms) impedance less than 2.2 kilohms
RFU DC OUT	Special mini-jack, DC 5 V
Headphones jack	Stereo mini-jack (ϕ 3.5)
Remote jack	Stereo mini-jack (ϕ 2.5)
MIC jack	Stereo mini-jack, -66 dBs low impedance with 2.5 to 3 V DC, output impedance 6.8 kilohms (ϕ 3.5)

— Continued on next page —



Hi8 VIDEO CAMERA RECORDER
SONY

General

Power requirements

On battery mounting surface
6.0 V (Battery pack)
7.5 V (AC power adaptor)
9.0 V (Alkaline batteries)

Power consumption

6.4 W (camera recording) including the viewfinder

Installation

Vertically, Horizontally

Operating temperature

0°C to 40°C (32°F to 104°F)

Storage temperature

-20°C to +60°C (-4°F to +140°F)

Dimensions

Approx. 109 x 106 x 189 mm (w/h/d)
(4 3/8 x 4 1/4 x 7 1/2 inches)

Mass

Approx. 860 g (1 lb 14 oz) excluding the battery pack, lithium battery, cassette, lens cap, jack cover and shoulder strap
Approx. 1,100 g (2 lb 6 oz) including the battery pack NP-55H, lithium battery CR2025, cassette E5-90, lens cap, jack cover and shoulder strap

Microphone

Electret condenser microphone, stereo type

AC power adaptor

Power requirements

110 – 240 V AC, 50/60 Hz

Power consumption

20 W

Output voltage

DC OUT: 7.5 V, 1.6 A in operating mode
Battery charge terminal: 10 V, 1.1 A in charge mode

Application

Sony battery pack NP-55H, NP-66H, NP-77H, NP-77HD

Operating temperature

0°C to 40°C (32°F to 104°F)

Storage temperature

-20°C to +60°C (-4°F to +140°F)

Dimensions

Approx. 170 x 41.6 x 82 mm (w/h/d)
(6 3/4 x 1 11/16 x 3 1/4 inches) including projecting parts and controls

Mass

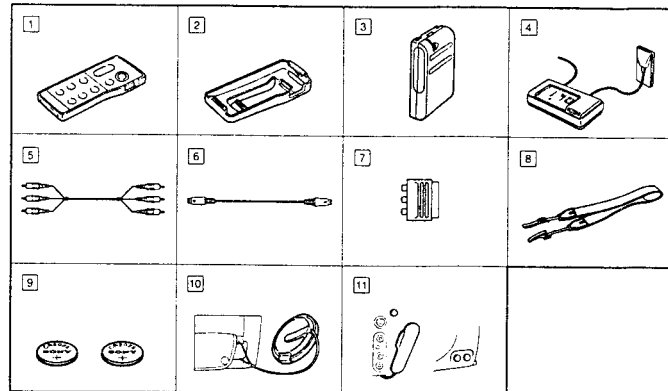
Approx. 520 g (18 oz)

Design and specifications are subject to change without notice.

Note

This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

Supplied accessories



1 Wireless Remote Commander (1)

2 Remote Commander Holder (1)

3 NP-55H Battery Pack (1)

4 AC-V35/V35A AC power adaptor (1)

5 A/V connecting cable (1)

6 S video connecting cable (1)

7 21-pin adaptor (1)

8 Shoulder strap (1)

9 CR2025 Lithium Batteries (2)
(for camcorder and for the Remote Commander)

10 Lens cap* (1)

11 Jack cover* (1)

* Attached to the camcorder

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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There is the color reproduction standard frame at the back of the book.

SERVICE NOTE

[SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

Part code and part name of the semiconductor for correction of the print board is described in the space of each print figure. Use this list when ordering parts.

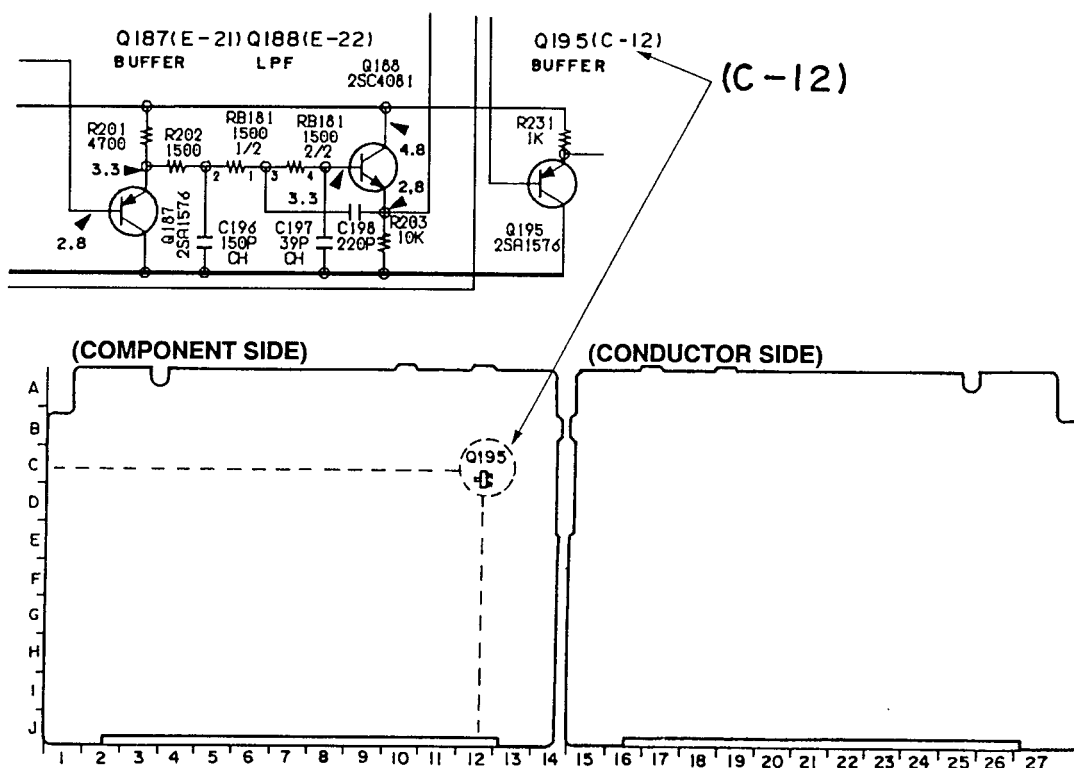
[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See pages 77, 91, 103, 120, 153 and 155.)

This diagram is useful for repair.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red in schematic diagrams. This enables to find the location on the board easily when servicing.



[HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

- ① Use a blank tape, record a short section, then press the stop button to stop.
- ② Set to recording mode again.
- ③ If the [✕] mark is flashing in the viewfinder at this time, head clogs are occurred.

Check During Playback of a Tape

- ① Play back a pre-recorded tape and display the image on a TV screen.
- ② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

[Cleaning method using a cleaning tape]

- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

SECTION 1
GENERAL

This section is extracted from
instruction manual.

Getting Started

Charging and Installing the Battery Pack

Before using your camcorder, you first need to charge and install the battery pack. The supplied battery pack and optional battery packs have not been charged when you purchased them. To charge the battery pack, use the supplied AC-V35/V35A AC power adaptor.

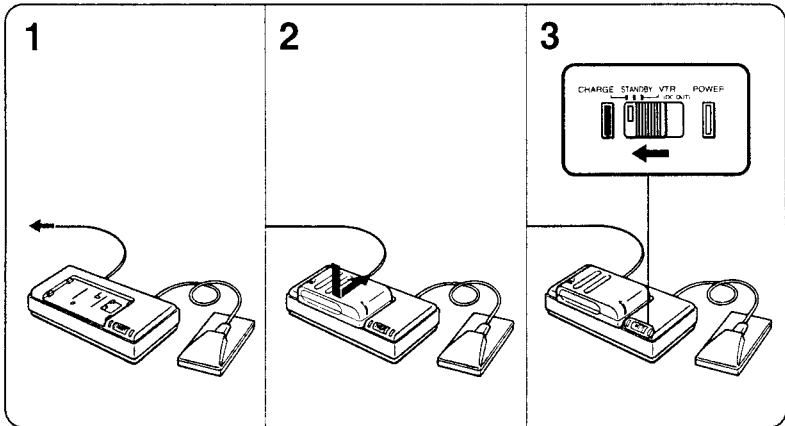
Charging the Battery Pack

Charge the battery pack on a flat place without vibration.

(1) Connect the AC power adaptor to a wall outlet. (2) Align the right side of the battery pack with the line on the AC power adaptor, then slide the battery pack in the direction of the arrow. (3) Set the selector on the AC power adaptor to CHARGE.

The CHARGE (orange) and POWER (green) lamps light up. Charging begins.

When charging is completed, the CHARGE lamp goes out. Set the selector to STANDBY and unplug the AC power adaptor from the wall outlet. Then remove the battery pack and install it on the camcorder. To stop charging, set the selector to STANDBY.



Charging Time and Battery Life

Battery pack	NP-55H (supplied)	NP-77H/77HD	NP-66H
Charging time *	70	140	110
Battery life**	60	130	80

* Approximate charging time to charge an empty battery pack using the AC-V35/V35A (Lower temperatures require a longer charging time.)

** Approximate continuous recording time indoors

Important!

Use the battery completely before recharging!

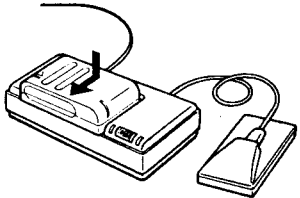
Before you recharge the battery, make sure the battery has been used up (discharged) completely. Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.

To use up the battery, remove the cassette and slide the POWER switch to CAMERA with the battery attached, and leave the camcorder until the  indicator and the red lamp in the viewfinder flash rapidly.

Charging and Installing the Battery Pack

Removing the Battery Pack

Slide the battery pack in the direction of the arrow.

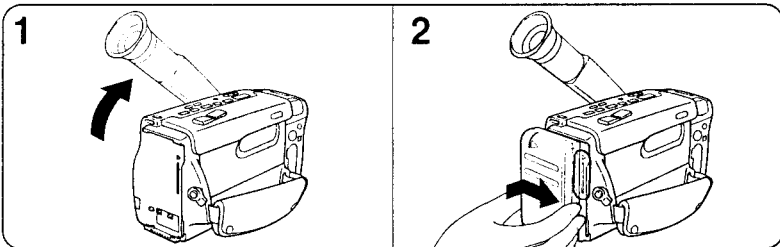


Note on charging the battery pack

- The POWER lamp will remain lit for a while even if the battery pack is removed and the power cord is unplugged after charging the battery pack. This is normal.
- If the POWER lamp does not light, set the selector to STANDBY and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to CHARGE again.
- You cannot operate the camcorder using the AC power adaptor while charging the battery pack.

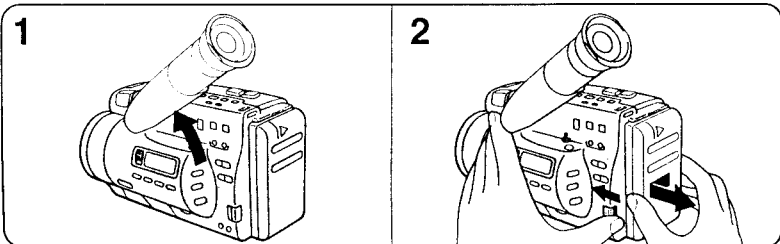
Installing the Battery Pack

(1) Lift up the viewfinder. (2) Align the right side of the battery pack with the white line on the camcorder, and slide the battery pack in the direction of the arrow.



Removing the Battery Pack

(1) Lift up the viewfinder. (2) While pressing BATT, slide the battery pack to the left.



Checking Supplied Accessories/Charging and Installing the Battery Pack

Tips for Using the Battery Pack

This section shows you how you can get the most out of your battery pack.

Preparing the Battery Pack

Always Carry Additional Batteries

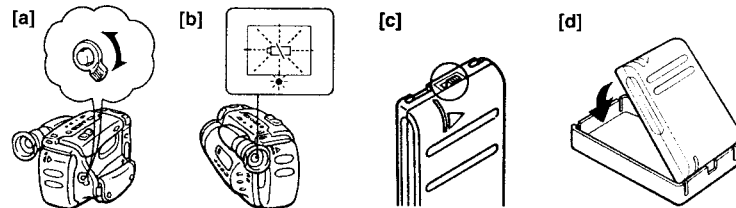
Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned. "Battery life" indicated in this manual is measured by the continuous recording time of the camcorder placed at room temperature using a fully-charged battery.

Battery Life is Shorter in Cold Environment

Battery efficiency is decreased and the battery will be used up more quickly if you are recording in cold environment.

To Save Battery Power

Turn the STANDBY switch on the camcorder down when not recording to save battery power. [a] A smooth transition between scenes can be made even if recording is stopped and started again. While positioning the subject, selecting an angle, or looking through the viewfinder lens, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.



When to Replace the Battery Pack

While you are using your camcorder, the remaining battery indicator decreases gradually as battery power is used up.



When the remaining battery indicator reaches the lowest point, the Δ indicator appears and starts flashing in the viewfinder. [b]

When the Δ indicator in the viewfinder changes from slow flashing to rapid flashing while you are recording, slide the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain smooth transition between scenes after the battery pack is replaced.

Note on the remaining battery indicator

The remaining battery indicator of the camcorder may indicate a different remaining capacity from that of the NP-77HD battery pack (not supplied). The indicator of NP-77HD is more accurate.

Note on the Rechargeable Battery Pack

The Battery Heats Up

During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern.

Tips for Using the Battery Pack

Battery Care

- Remove the battery pack from the camcorder after using the battery pack, and keep it in a cool place. When the battery pack is attached to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is set to OFF, which shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Therefore, you should charge the battery right before using the camcorder.

How to Use the Switch on the Battery Pack

This switch is provided so that you can mark the charged battery. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is used up (or in whichever direction you want to remind yourself). [c] on page 7.

The Life of the Battery Pack

The battery pack can be fully charged and discharged about 500 times under normal temperatures. If the battery indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging Temperature

You should charge batteries at temperatures from 10°C to 30°C (from 50°F to 86°F). Lower temperatures require a longer charging time.

Note on Charging

A Brand-new Battery

A brand-new battery pack is not charged. Before using the battery pack, charge it completely.

Before Recharging a Used Battery Pack

- Make sure to use up the battery before recharging.
- If recording is completed before the Δ indicator appears in the viewfinder, you should remove the tape, slide the POWER switch to CAMERA, turn up the STANDBY switch, and leave the camcorder until the battery indicator flashes rapidly.
- When you use the AC-S10 power adaptor or the DC-S10 car battery charger, you can use the discharging function.
- Charging the usable battery causes a lowering of battery capacity. Battery capacity can be recovered if you fully discharge and charge the battery again.

After Long Storage

Recharge the battery pack after a long period of storage. If the battery pack is charged fully but not used for a long time (about 1 year), it becomes discharged. Charge it again, but in this case the battery life will be shorter than normal. After several charging and discharging cycles, the battery life will recover its original capacity.

Note on the Terminals

If the terminals (metal parts on the back) are not clean, the battery duration will be shortened. When the terminals are not clean or when the battery pack has not been used for a long time, repeat installing and removing the battery pack. This improves the contact condition. Also, wipe the + and - terminals with a soft cloth or paper.

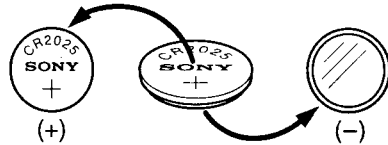
Be Sure to Observe the Following

- To prevent an accident caused by a short circuit, do not allow metal objects such as a necklace to touch the battery terminals. Carry the battery pack attaching to the terminal cover. [d] on page 7
- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor convert the battery pack.
- Do not expose the battery pack to any mechanical shock.

Installing the Lithium Batteries

Your camcorder is supplied with two lithium batteries. One is for the camcorder, and the other is for the Remote Commander.

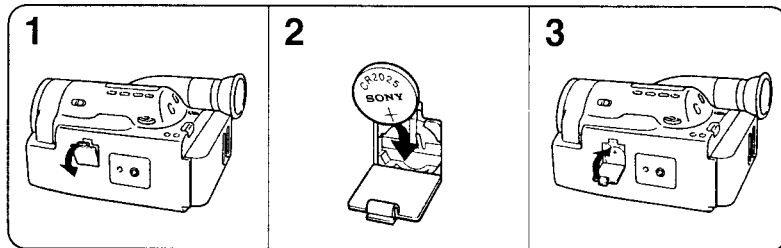
Note that lithium battery has a positive (+) and a negative (-) terminals as illustrated. **Be sure to install the lithium battery so that terminals on the battery match the terminals on the camcorder or the Remote Commander.**



Installing the Lithium Battery in the Camcorder

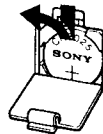
To activate the clock, the world clock and a title, you must first install a lithium battery.

(1) Open the lid of the lithium battery compartment located at the bottom of the camcorder. (2) Install one of the supplied lithium batteries with the + (positive) side facing out. (3) Close the lid.



To Remove the Lithium Battery

Push the battery down once and pull it out from the holder. When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date and time.



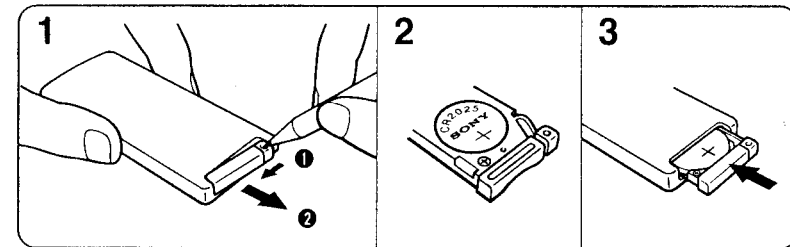
Tips for Using the Battery Pack/Installing the Lithium Batteries

Installing the Lithium Batteries

Installing the Lithium Battery in the Remote Commander

To use the Remote Commander, you must insert the lithium battery.

(1) Pull out the lithium battery holder from the Remote Commander. (2) Install the lithium battery with the (+) (positive) side facing upward. (3) Put the lithium battery holder back into the Remote Commander.

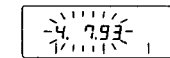
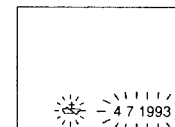


Lithium Battery Life

The lithium battery for the camcorder lasts for about 1 year under normal operation. When the battery becomes weak or dead, the date or time indicator keeps flashing in the display window and a battery indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA.

The lithium battery for the Remote Commander lasts for about 6 months under normal operation. When the battery becomes weak or dead, the Commander does not work.

In either cases, **replace the battery with the Sony CR2025 lithium battery. Use of another battery may present a risk of fire or explosion.**



Cautions

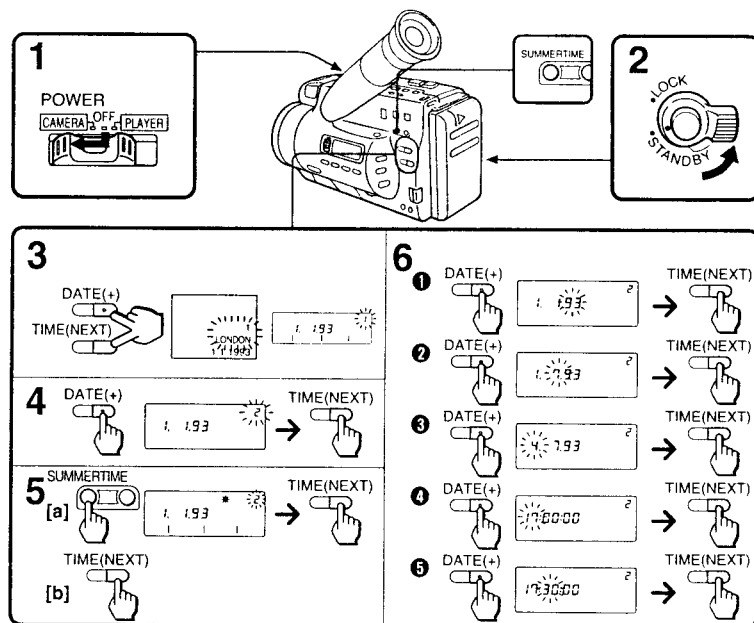
- Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.
- Do not hold the battery with the metallic tweezers, otherwise a short-circuit may occur.
- The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

Setting the Date and Time

Before setting the clock, make sure a power source and lithium battery are installed.

(1) While pressing the small green button on the POWER switch, slide it to CAMERA. (2) Turn STANDBY up. (3) Press DATE (+) and TIME (NEXT) simultaneously for more than 2 seconds until the area name and number flash in the viewfinder. (4) Press DATE (+) to set your home area. (5) Set the Time.

[a] For summer time, press SUMMERTIME then press TIME (NEXT). [b] For standard time, press TIME (NEXT). (6) Adjust the flashing digits for the year, month, day and hour by pressing DATE (+) and TIME (NEXT). To set the year to 1993, there is no need to press DATE (+) in 6-①. Note that when you keep DATE (+) pressed, the digits advance faster.



Time Zones and Area Numbers and Names

Countries	Area name	Area number
The United Kingdom and Portugal (GMT)	LONDON	1
Other European countries (CET)	PARIS	2
Finland, Greece, etc.	CAIRO	3

Setting the Date and Time

To Correct the Date and Time Setting

Repeat steps 3 to 6.

To Check the Preset Date and Time

Press DATE (+) to display the date indicator in the viewfinder and the display window. Press TIME (NEXT) to display the time indicator. When you press the same button again, the indicator goes out.

To Reset to Standard Time

Press SUMMERTIME. The * indicator goes off.

Note on the setting of the year

When you set the year, each time you press DATE (+) the digits change as follows.

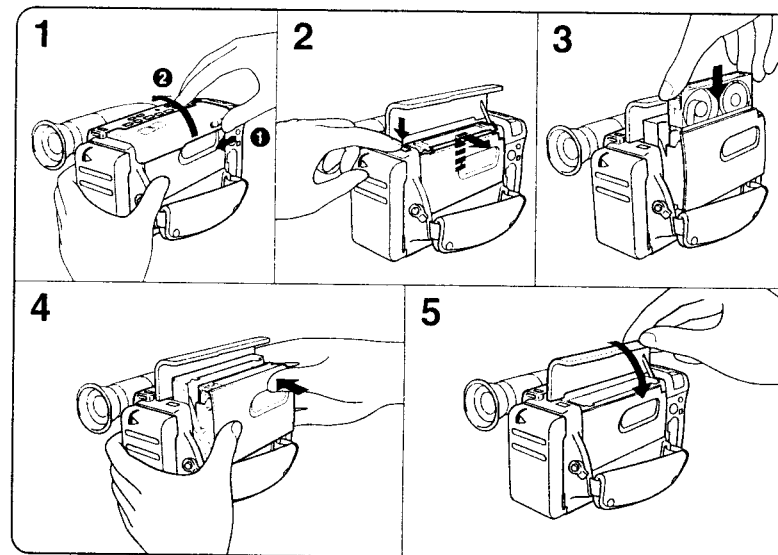
1993 → 1994 → ... → 2020
↑

Inserting a Cassette

Make sure that the power source is connected.

(1) While sliding the lid lock, lift up the lid. Then open it. (2) Press EJECT. The cassette compartment automatically lifts up and opens. (3) Insert a cassette (not supplied) with the window facing out. (4) Press the PUSH mark on the cassette compartment to close it. The cassette compartment automatically goes down. (5) Close the lid.

To eject the cassette, press EJECT.

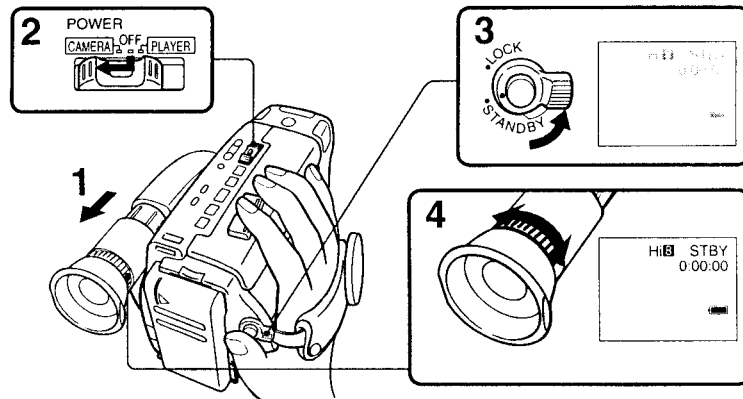


Installing the Lithium Batteries/Setting the Date and Time

Adjusting the Viewfinder Lens

Before you use camcorder for the first time or after someone else has used it, focus the viewfinder lens. Make sure that the power source is connected to the camcorder.

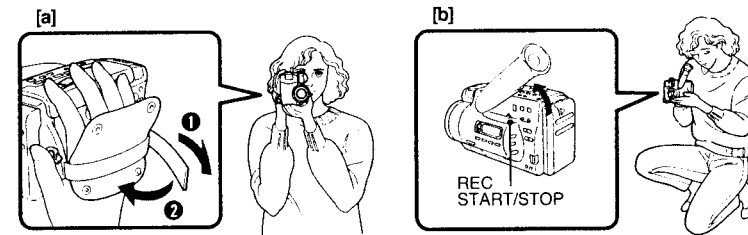
(1) Pull the viewfinder out until it clicks. (2) While pressing the small green button on the POWER switch, slide it to CAMERA. (3) Turn STANDBY up. (4) Turn the viewfinder lens adjustment ring so that the indicators in the viewfinder come into sharp focus.



Setting the Date and Time/Inserting a Cassette/Adjusting the Viewfinder Lens

Hints for Better Shooting

For hand-held shots, you'll get better results by holding the camcorder according to the following suggestions:



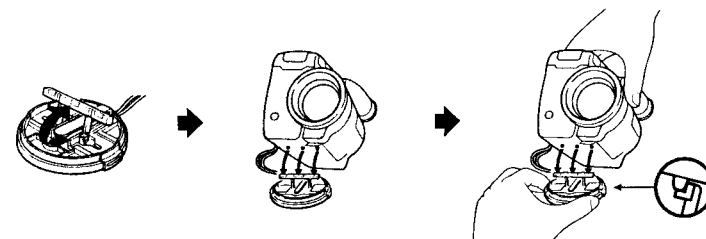
- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb. [a]
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting recording angle. Turn the viewfinder up for recording from a low position. [b]

Place the camcorder on a flat surface or use a tripod

Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder (p.50). Make sure the tripod screw is shorter than 6.5mm (9/32 in).

Use the lens cap as the instant stand

You can use the supplied lens cap as a handy camcorder stand.

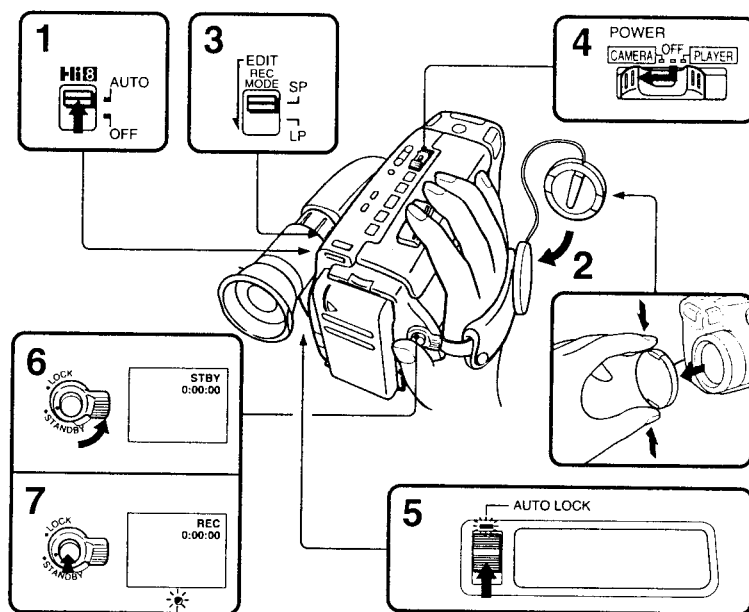


Basic Operations

Camera Recording

Make sure that a power source is installed and a cassette is inserted. Before you record one-time events, you may want to make a trial recording to make sure that you are using the camcorder correctly.

(1) Slide the Hi8 AUTO/OFF switch to AUTO (p.42). (2) Remove the lens cap and clip it on the grip strap. (3) Set REC MODE/EDIT to LP (long play) or SP (standard play), according to the length of your planned recording. (4) While pressing the small green button on the POWER switch, slide it to CAMERA. (5) Slide AUTO LOCK up. The AUTO LOCK lamp (green) lights up. (6) Turn STANDBY up. (7) Press START/STOP. The camcorder starts recording and the "REC" indicator will appear in the viewfinder.



To Stop Recording Momentarily

Press START/STOP again. The "STBY" indicator appears in the viewfinder (Standby mode).

To Finish Recording

Turn STANDBY down and set the POWER switch to OFF. Then, eject the tape (p.12).

Note on Standby mode

If you leave the camcorder for 5 minutes or more with a cassette inserted in Standby mode, the camcorder goes off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, turn STANDBY down and turn it up again. To start recording, press START/STOP.

Note on recording

When you record from the beginning of the tape, run the tape for about 15 seconds before actual recording. This prevents the camcorder from missing any start-up scenes when you play back the tape.

Hints for Better Shooting/Camera Recording

Camera Recording

Note on the tape counter

The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press RESET located at the top of the camcorder.

Recording mode

This camcorder records in the SP mode (approximately 20.051 mm/second) and in the LP mode (approximately 10.058 mm/second) and can play back in the SP mode and LP mode. The quality of the playback picture in the LP mode, however, will not be as good as that in the SP mode.

If you wear glasses

You can bend back the eyecup to get a better view of the viewfinder.

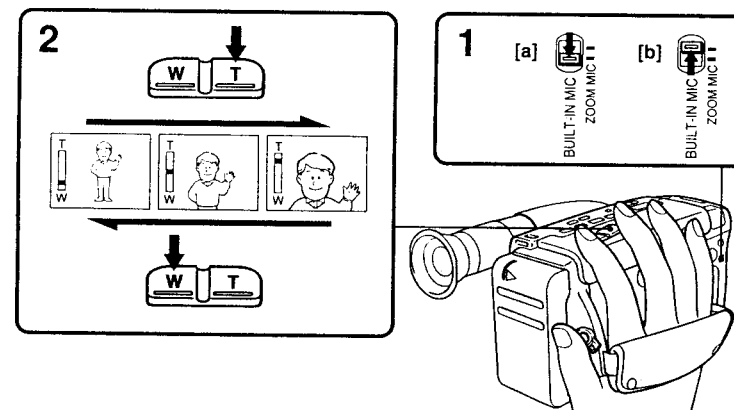
Using the Zoom Feature

Zooming is a recording technique that lets you change the size of the subject in the scene. You can also use the zoom to focus manually or to decide on a shooting angle before you start recording. When you zoom in or zoom out, you can also set the sound to "zoom" along with the picture. For more professional-looking recordings, use the zoom sparingly.

T side: for telephoto (subject appears closer)

W side: for wide-angle (subject appears farther away)

(1) Set the BUILT-IN MIC switch: [a] To record the usual Hi-Fi stereo sound regardless of zooming, set to the green mark position. [b] To make the sound "zoom" along with the picture, set to ZOOM MIC. The "ZOOM MIC" indicator appears in the viewfinder. (2) Press the T or W side of the power zoom button.



Zooming Speed

Press the power zoom button firmly for a high-speed zoom. Press it softly for a relatively slow zoom.

When you shoot a subject using a telephoto zoom

If you cannot get a sharp focus while in extreme telephoto zoom, press the W side of the power zoom button until the focus is sharp.

You can shoot a subject that is at least 80 cm (about 2.6 feet) away from the lens surface in the telephoto position, or 1 cm (about 1/2 inches) in the wide-angle position.

Note on ZOOM MIC

When you "zoom" the sound at the telephoto position, the sound is recorded in monaural.

Manual focusing in macro

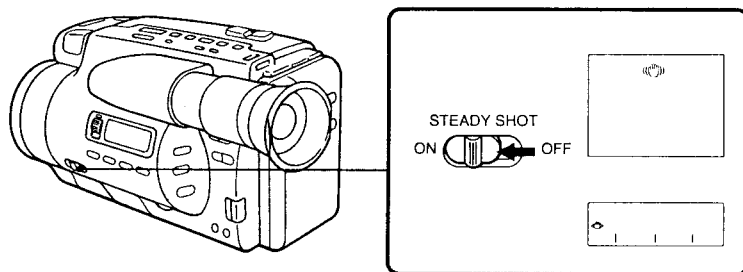
You can also shoot with manual focus while doing close-ups (p.27).

Getting a Steady Picture

You can use the Steady Shot function to compensate for camera-shake in the following cases.

- When you zoom in
- When you shoot while moving
- When you shoot from a car window

Set STEADY SHOT to ON. The  indicator appears in the viewfinder and in the display window.



Camera Recording

To Release the Steady Shot Function

Set STEADY SHOT to OFF.

Note on the Steady Shot function

The Steady Shot function will not correct excessive camera-shake.

When you do not need to use the Steady Shot function

Set STEADY SHOT to OFF. You can conserve the battery.

When you shoot stationary object with a tripod

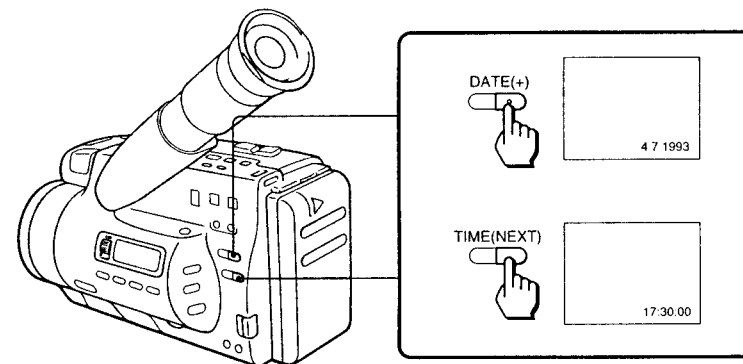
Set STEADY SHOT to OFF.

Camera Recording

Recording the Date or Time

During recording or standby, press DATE (+) or TIME (NEXT).

You can record the date or time displayed in the viewfinder with the picture. You cannot record the date and time at the same time. Except for the date or time indicator, no indicator in the viewfinder is recorded.



To Stop Recording with the Date or Time

Press DATE (+) or TIME (NEXT) again. Recording continues.

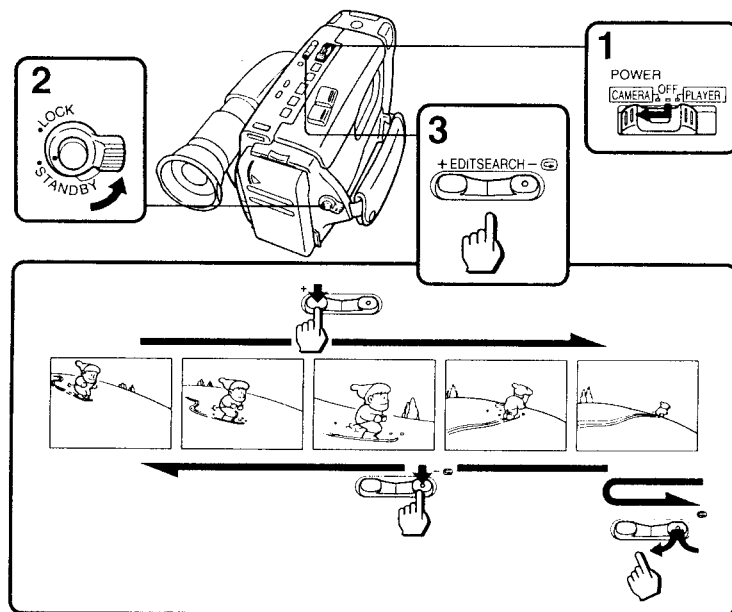
Checking the Recorded Picture in the Viewfinder

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder.

(1) While pressing the small green button on the POWER switch, slide it to CAMERA. (2) Turn STANDBY up. (3) Press EDITSEARCH. Press the - (⊖) side momentarily, the last few seconds of the recorded portion plays back (Rec. Review).

Keep pressing EDITSEARCH to play back the last recorded portion (Edit Search)

+ side: to view the forward playback picture
- side: to view the reverse playback picture



Monitoring the Sound While Viewing the Playback Picture in the Viewfinder

Connect headphones (not supplied) to the PHONES jack. While pressing the small green button on the POWER switch, slide it to PLAYER, and play back the tape (p.21).

To Stop Playback

Release EDITSEARCH.

To Begin Re-recording

Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the tape, the transition between the last scene you recorded and the next scene you record will be smooth.

Camera Recording

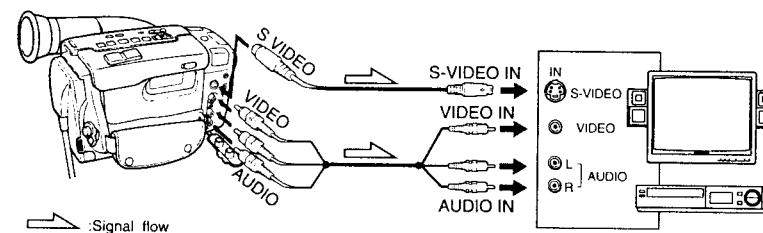
Connections for Playback

You can use this camcorder as a VCR by connecting it to your TV for playback. There are two ways to connect your camcorder.

- Connecting to a TV with Video/Audio input jacks or a VCR
- Connecting to a TV without Video/Audio input jacks

Connecting to a TV with Video/Audio Input Jacks or a VCR

Connect the camcorder to your TV by using the supplied connecting cable. Set the TV/VCR selector to VCR on the TV. When Connecting the camcorder to VCR, set the input selector on the VCR to LINE.

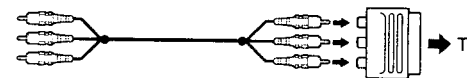


If your TV or VCR is a monaural type, connect only the white plug for audio on both the camcorder and the TV or the VCR. With this connection, the sound is in monaural.

If you are going to connect the camcorder using the S video cable, you do not need to connect the yellow (video) plug of the A/V connecting cable.

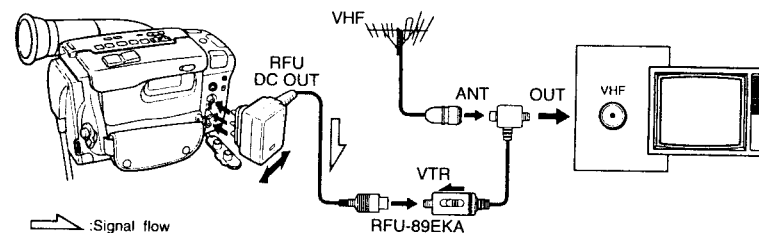
If your TV has a 21-pin connector (EUROCONNECTOR)

Use the supplied 21-pin adaptor.



Connecting to a TV without Video/Audio Input Jacks

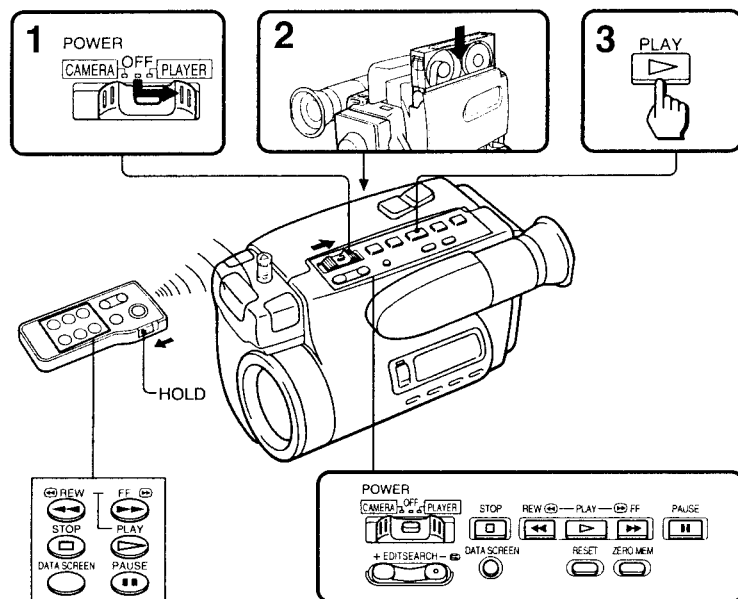
Connect the camcorder to the TV using an appropriate RFU adaptor such as the RFU-89EKA (not supplied). For details on connection, refer to the instruction manual of the RFU adaptor. The following illustrates the connection of the RFU-89EKA as an example.



Playing Back a Tape

You can monitor the playback picture in the viewfinder. You can also monitor on the TV screen, after connecting the camcorder to the TV/VCR (p.20).

(1) While pressing the small green button on the POWER switch, slide it to PLAYER. (2) Insert the recorded tape with the window facing out. (3) Press ▷. Playback starts.



To stop playback, press □.
To rewind the tape, press ◀◀.
To advance the tape rapidly, press ▶▶.

See next page for further information.



Connections for Playback/Playing Back a Tape

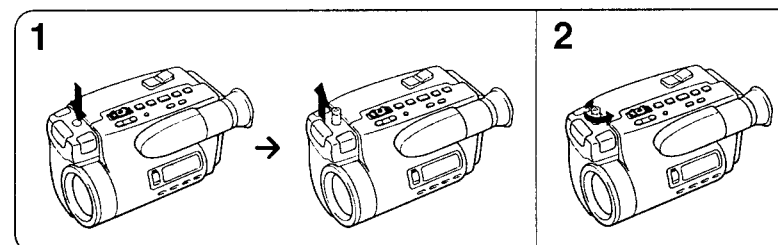
Playing Back a Tape

Using the Remote Commander

You can control playback using the supplied Remote Commander.

Before using the Remote Commander, insert the lithium battery, slide the HOLD switch in the direction opposite to the arrow. Pop out the remote sensor of the camcorder.

(1) Push the head of the remote sensor lightly. The remote sensor pops up. (2) Aim the remote sensor in the direction you want to point the Remote Commander at (p.52).



Various Playback Modes

To view a still picture (playback pause)

Press || during playback. To resume playback, press || or ▷.

To locate a scene (Picture Search)

Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture during fastforward or rewind (Skip Scan)

Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▷.

To view the picture in a sequence of stop-motion images

Press EDITSEARCH in playback pause mode. If you keep pressing EDITSEARCH, you can view the picture playback in the forward (+) or reverse (-) direction.

Notes on playback

- Streaks appear and the sound is muted in the various playback modes.
- When still picture mode lasts for 5 minutes or more, the camcorder automatically enters stop mode.

To display the viewfinder screen indicators on the TV

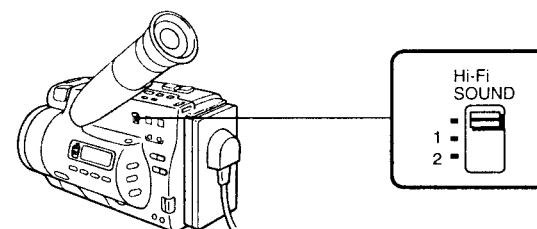
Press DATA SCREEN.

To erase the indicators, press DATA SCREEN again.

To Select the Monitor Sound

Normally set Hi-Fi SOUND to the green mark position.

- When you play back an AFM monaural sound recorded tape, set to the green mark position.
- When you playback a dual soundtrack tape, set to "1" or "2".



Displaying the Recording Date or Time — Data Code Function

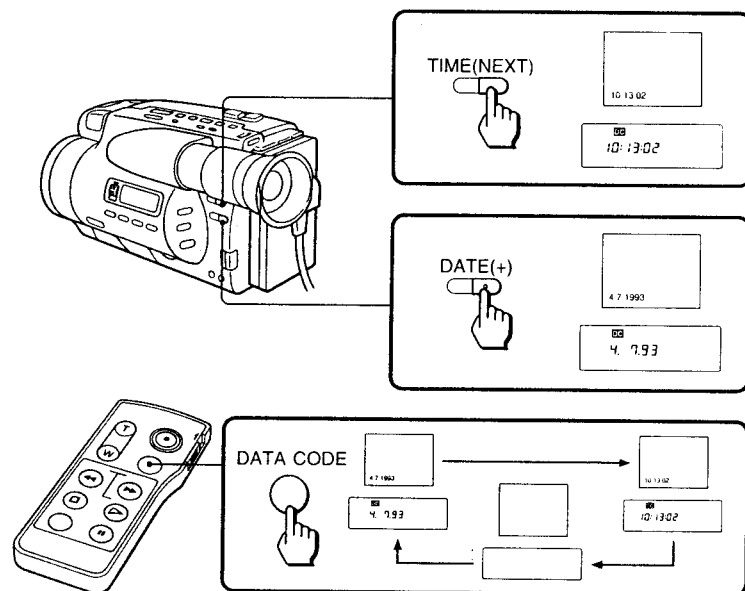
Even if you did not record date or time when you were recording, you can display the recording date or time (Data Code) on the TV during playback or editing. The data code is also displayed in the viewfinder and the display window.

To Display the Recording Date

Press DATE (+) on the camcorder, or press DATA CODE on the Remote Commander. To make the date disappear, press DATE (+) again or DATA CODE twice.

To Display the Recording Time

Press TIME (NEXT) on the camcorder, or press DATA CODE on the Remote Commander twice. To make the time disappear, press it again.



When bars (---) appear

- A blank portion of the tape is being played back.
- The tape was recorded by a camcorder without the data code function.
- The tape was recorded by a camcorder without having date and time set.
- The tape is unreadable due to tape damage or noise.

Playing Back a Tape

Advanced Operations

Using Alternate Power Sources

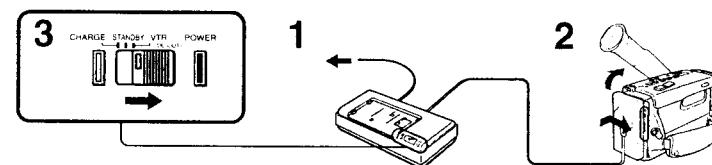
You can choose any of the following power sources for your camcorder: battery pack (p.5), house current, alkaline batteries, and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	House current	AC power adaptor AC-V35/V35A (supplied), AC-S10
Outdoors	Battery pack	Battery pack NP-55H (supplied), NP-77HD, NP-77H, NP-66H
	Alkaline batteries	Battery case EBP-77
In the car	12 V or 24 V car battery	DC pack DCP-77

Using House Current

To use the supplied AC-V35/V35A AC power adaptor:

(1) Connect the AC power adaptor to a wall outlet. (2) Lift up the viewfinder. Align the right side of the connecting plate with the white line on the camcorder, then slide the connecting plate in the direction of the arrow. (3) Set the selector of the AC power adaptor to the "VTR (DC OUT)" position. The green lamp lights up.



Note on the POWER lamp

The POWER lamp will remain lit for a while even if the unit is unplugged after using. This is normal.

To remove the AC power adaptor

The connecting plate of the AC power adaptor is removed in the same way as the battery pack (p.6).

Using Alkaline Batteries

Use the EBP-77 battery case (not supplied) with 12 R6 (AA) size alkaline batteries (not supplied). Insert the batteries in the battery case, and attach the battery case to the battery mounting surface of the camcorder.

To remove the battery case

The battery case is removed in the same way as the battery pack (p.6).

Using a Car Battery

Use the DCP-77 DC pack (not supplied). Connect the cord of the DC pack to the cigarette lighter socket of the car (12 V or 24 V). Connect the DC pack to the battery mounting surface of the camcorder.

To remove the DC pack

The DC pack is removed in the same way as the battery pack (p.6).

Options for Charging the Battery Pack

AC-S10 AC power adaptor:

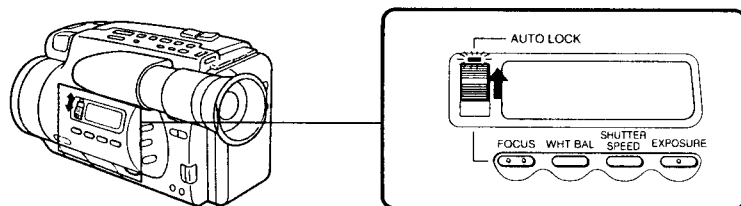
You can charge a battery pack whether it is used up or not with this adaptor because it has a discharging function.

Selecting Automatic or Manual Adjustment Modes

The camcorder's automatic functions offer you worry-free operation under most shooting conditions. But in some circumstances, manual adjustment is better for creative recording.

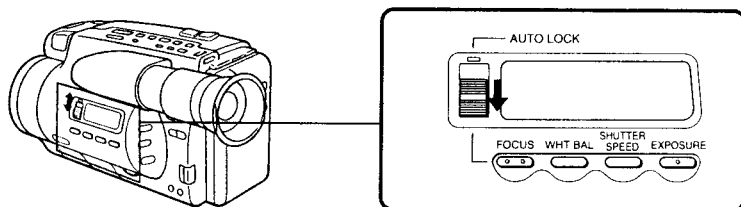
Automatic Adjustment Mode

Slide AUTO LOCK up. The AUTO LOCK lamp (green) lights up. In AUTO LOCK mode, the camcorder adjusts the focus, white balance and exposure automatically. It also sets the shutter speed to 1/50.



Manual Adjustment Mode

Slide AUTO LOCK down. The AUTO LOCK lamp goes off. In manual mode, you can adjust the focus, white balance, exposure, and shutter speed manually. Even if in manual mode, the settings you didn't adjust manually remain the same as when in automatic adjustment mode.



About the previous settings

Manual settings are saved in the following case:

- When you resume automatic mode after you make manual adjustments and then select manual mode again
- When you set the POWER switch to OFF

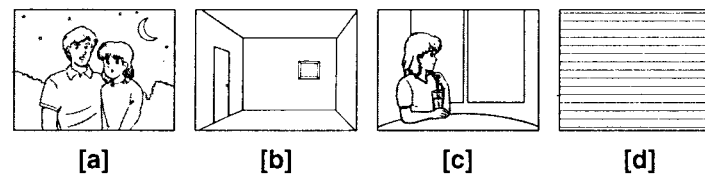
However, manual settings are canceled if more than 5 minutes pass after you have detached the battery.

Using Alternate Power Sources/Selecting Automatic or Manual Adjustment Modes

Focusing Manually

When to Use Manual Focus

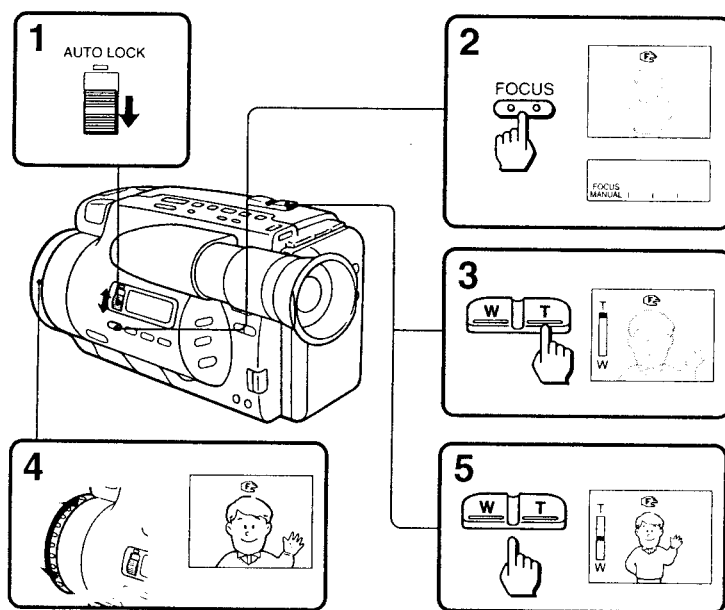
Use manual focus under the following conditions:



- Insufficient light [a]
- Subjects with little contrast – walls, sky, etc. [b]
- Too much brightness behind the subject [c]
- Horizontal stripes [d]
- Subjects through frosted glass
- Subjects beyond nets, etc.
- Bright subject or subject reflecting light
- Shooting a stationary subject when using a tripod

Focusing Manually

When focusing manually, first focus in telephoto before recording, and then reset the shot length.
 (1) Slide AUTO LOCK down. (2) Press FOCUS. The  indicator appears in the viewfinder and the FOCUS MANUAL indicator appears in the display window. (3) Keep pressing the T side of the power zoom button until the zooming stops. (4) Turn the focus ring to adjust the focus. (5) Set the desired shot length.



Focusing Manually

To Reactivate Auto Focusing

Press FOCUS again, or slide AUTO LOCK up. The  indicator in the viewfinder disappears.

Shooting in relatively dark places

Shoot at wide angles after focusing in telephoto.

Note on the focus ring

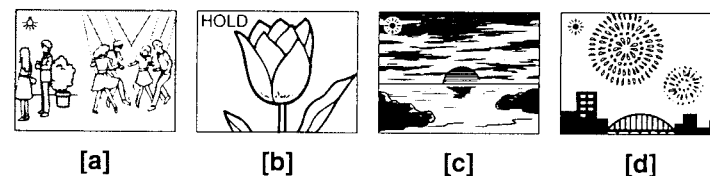
The focus ring does not have a stop position.

Adjusting the White Balance

White balance is the adjustment to make white subjects look white and to obtain a more natural colour balance.

Selecting the Appropriate Mode

Select the appropriate white balance mode under the following conditions:



Indoor mode

- Lighting condition changes quickly. [a]
- Too bright place such as photography studios
- Under sodium lamps or mercury lamps

HOLD Hold mode

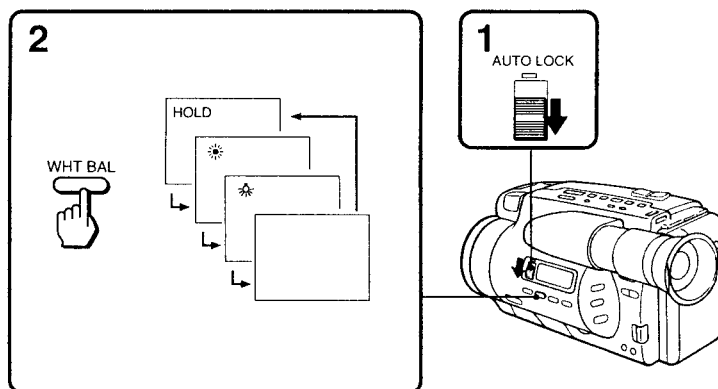
- Monochromatic subject or background [b]

Outdoor mode

- Under a colour matching fluorescent lamp
- Recording a sunset/sunrise, just after sunset, just before sunrise [c], neon signs, or fireworks [d]

Setting White Balance Mode

(1) Slide AUTO LOCK down. (2) Press WHT BAL repeatedly so that the desired mode indicator appears in the viewfinder.



To Return to Automatic White Balance Mode

Press WHT BAL repeatedly until the white balance indicator disappears, or slide AUTO LOCK up.

Locking the White Balance Setting (HOLD mode)

When you set the white balance to HOLD mode, the last automatic white balance setting will be locked and maintained even if lighting conditions change.

(1) Slide AUTO LOCK up. (2) Point the camcorder at a white and flat object such as a white wall or paper for about 15 seconds. (3) Slide AUTO LOCK down. (4) Press WHT BAL repeatedly so that the HOLD indicator appears in the viewfinder.

Note on the HOLD mode setting

When you detach the battery or change white balance mode, the setting you made for HOLD mode is canceled.

Adjusting the White Balance

Setting the Shutter Speed

You can record a fast-moving subject at a high shutter speed. This enables you to view the movement clearly in freeze frame when you play back the tape with an 8 mm player that has the clean still function. When using a high shutter speed, you must maintain a sufficient light level.

Selecting the Appropriate Shutter Speed

Select the appropriate shutter speed, referring to the following examples:



1/10000, 1/4000, or 1/2000 seconds

- On clear days, recording a golf or tennis swing (to view the hit ball clearly in the still picture, set to 1/4000 or 1/10000)
- Recording skiers

1/1000 or 1/250 seconds

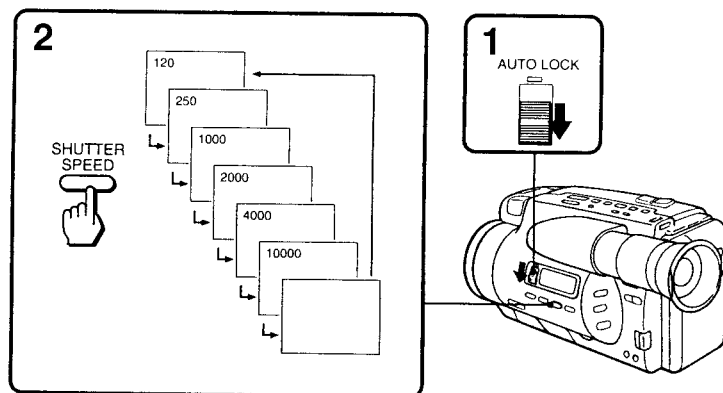
- On overcast days, recording a moving merry-go-round or roller coaster
- Recording a scenery from a car window

1/120 seconds

- Instead of the ND2 filter (to reduce the exposure level to about half)
- Recording indoor sports

Setting the Shutter Speed

(1) Slide AUTO LOCK down. (2) Press SHUTTER SPEED repeatedly so that the desired shutter speed indicator appears in the viewfinder.



To Return to Normal Shutter Speed (1/50)

Press SHUTTER SPEED repeatedly until the shutter speed indicator disappears, or slide AUTO LOCK up.

When using a high shutter speed

You must maintain a sufficient light level.

Setting the Shutter Speed

Adjusting the Exposure

When to Adjust the Exposure

Adjust the exposure manually under the following cases.

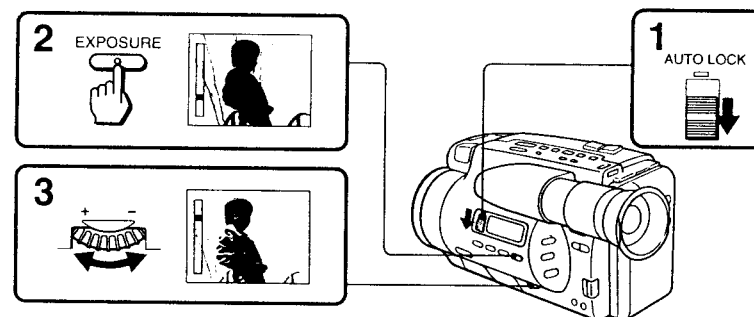


- [a] Turn the Exposure dial to + when:
- The background is too bright (back lighting)
 - Insufficient light: most of the picture is dark

- [b] Turn the Exposure dial to - when:
- Bright subject and dark background
 - To record the darkness faithfully

Adjusting the Exposure

(1) Slide AUTO LOCK down. (2) Press EXPOSURE. The exposure indicator appears in the viewfinder and the exposure is locked at the actual brightness. (3) Turn the EXPOSURE dial to adjust exposure. The exposure is locked at the adjusted brightness.



To Return to Automatic Exposure Mode

Press EXPOSURE again, or slide AUTO LOCK up.

Shoot with the sun behind you

When the light source is behind your subject, or in the following situations, the subject will be recorded too dark.

- The subject is indoors and there is a window behind the subject.
- Bright light sources are included in the scene.
- When shooting a person wearing white or shiny clothes in front of a white background, the face will be recorded too dark.

When shooting in the dark

We recommend you to use the video light (not supplied). To get the best colour, you must maintain a sufficient light level.

Fade-in and Fade-out

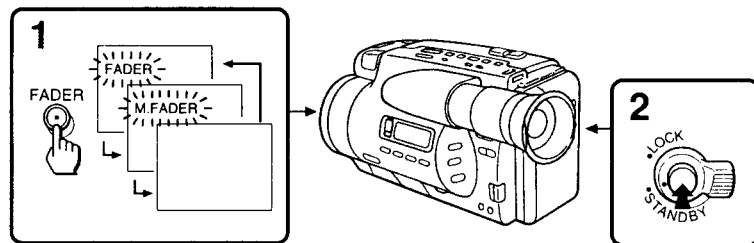
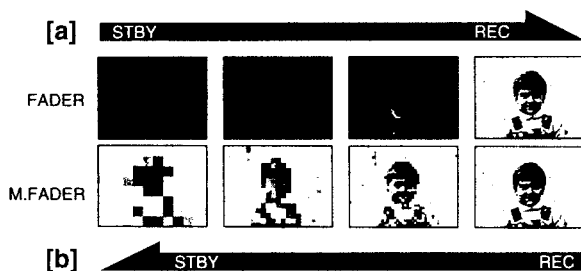
You can fade in or fade out to give your recording a professional appearance. When fading in, the picture will gradually appear from black or mosaic. The sound will also gradually increase. When fading out, the picture will gradually fade to black or mosaic. The sound will also decrease.

When Fading in [a]

(1) During the camcorder is in Standby mode, press FADER. The FADER indicator starts flashing. (2) Press START/STOP to start recording. The FADER indicator stops flashing.

When Fading out [b]

(1) During recording, press FADER. The FADER indicator starts flashing. (2) Press START/STOP to stop recording. The FADER indicator stops flashing.



To Cancel the Fade-in/out Function

Before pressing START/STOP, press FADER once or twice until you have neither the FADER nor M.FADER indicator in the viewfinder.

When the date or time indicator is displayed

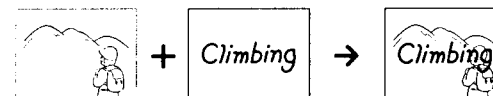
The date or time does not fade in nor fade out.

Adjusting the Exposure/Fade-in and Fade-out

Superimposing a Title

You can superimpose your title such as a hand-written message or illustration over the picture while you are recording.

- You can store one title.
- You cannot superimpose a title on the tape already recorded.
- Before superimposing, store the title.



Step to Superimpose a Title

Store a title. → Select the title display mode and colour. → Superimpose the title.

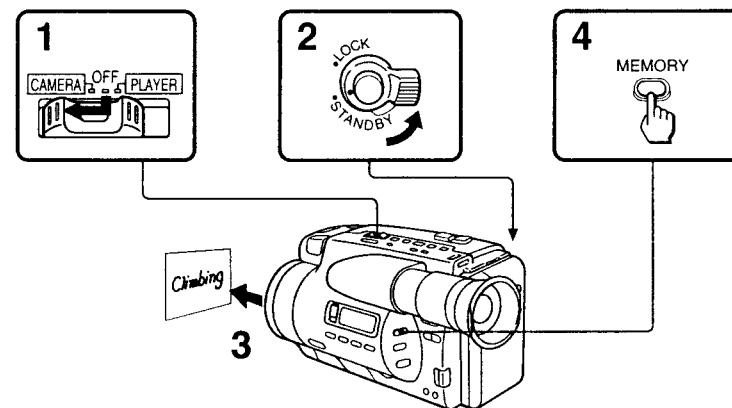
Note on making a title card

Use a plain, white card and draw the title in thick, dark letters.

Storing a Title

Before storing a title, make sure a power source and lithium battery are installed.

(1) While pressing the small green button on the POWER switch, slide it to CAMERA. (2) Turn STANDBY up. (3) Point the camcorder to the title card and adjust the focus. (4) Press MEMORY. The title is stored. To make the title disappear, press SUPERIMPOSE ON/OFF.

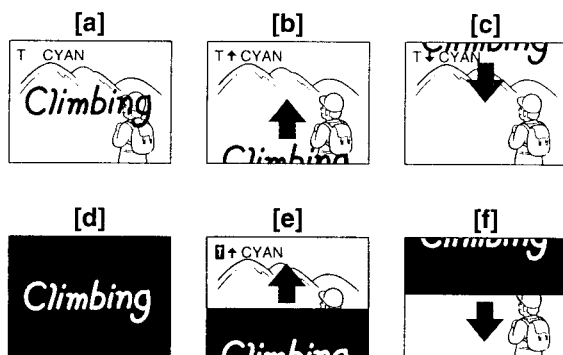


To Check the Title

Press SUPERIMPOSE ON/OFF in Standby mode.

Selecting the Display Mode and Title Colour

You can scroll the title like scrolling credits in the movies or reverse the title. 8 colours are available for the title.

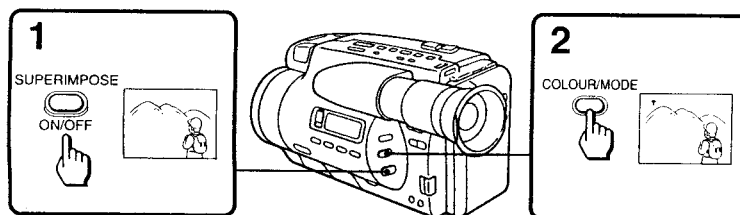


- [a] Normal display (no indicator)
- [b] Scrolling up the title ↑
The title scrolls up and stops at the center, then disappears scrolling up.
- [c] Scrolling down the title ↓
The title scrolls down and stops at the center, then disappears scrolling down.
- [d] Reversing the title with the picture
- [e] Scrolling up the reversed title ↑
- [f] Scrolling down the reversed title ↓

To Select the Display Mode

(1) Press SUPERIMPOSE ON/OFF to make the title disappear. (2) Press COLOUR/MODE until the display mode indicator you want appears. Each time you press COLOUR/MODE, the indicator changes:

No indicator → ↑ → ↓
 ↓ ← ↑ ←



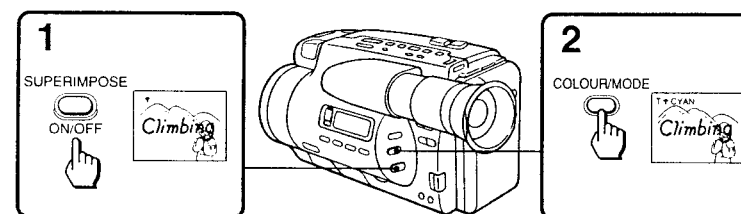
Superimposing a Title

Superimposing a Title

To Select the Title Colour

(1) Press SUPERIMPOSE ON/OFF to display the title. (2) Press COLOUR/MODE until the colour indicator you want appears. Each time you press COLOUR/MODE, the indicator changes:

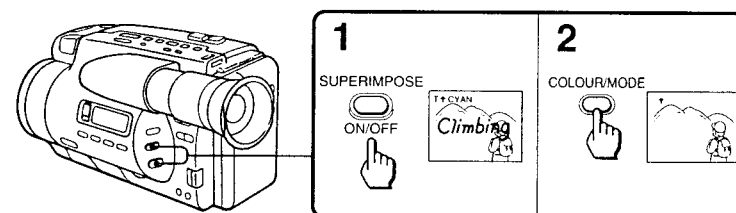
WHT (white) → BLUE → GRN (green) → CYAN
 ↑
 BLK (black) ← YEL (yellow) ← VIO (violet) ← RED



Superimposing the Title

Before superimposing the title, set the camcorder in Standby mode and select the title display mode.

- (1) Press SUPERIMPOSE ON/OFF when you want to insert the title during recording. The title appears.
- (2) When you want to make the title disappear, press SUPERIMPOSE ON/OFF again.



Function of the COLOUR/MODE button

When the title is displayed, this button functions as the colour selection button.
 When the title is not displayed, this button functions as the display mode selection button.

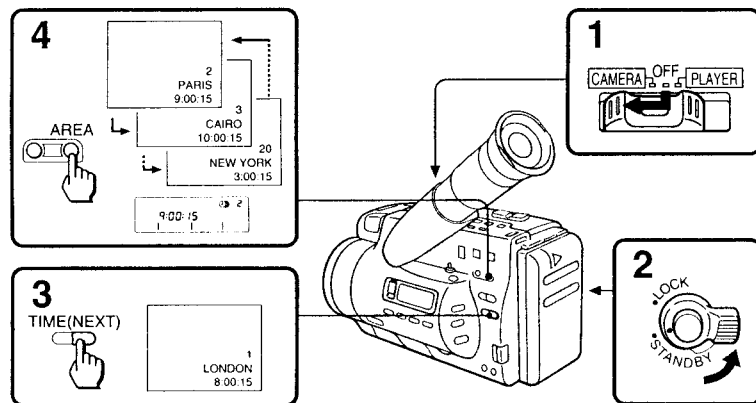
Note on the colour and display mode indicators

The colour and display mode indicators in the viewfinder are not recorded.

Using the World Clock

Before using the world clock, you need to set the date and time in your home area (p.11). Reset the clock according to the local time zone by pressing AREA. First, find the area name in the "Time Zone Chart" on page 38.

(1) While pressing the small green button on the POWER switch, slide it to CAMERA. (2) Turn STANDBY up. (3) Press TIME (NEXT). The setting of time appears. (4) Press AREA to select the area name where you will use the camcorder. The  indicator appears in the display window.

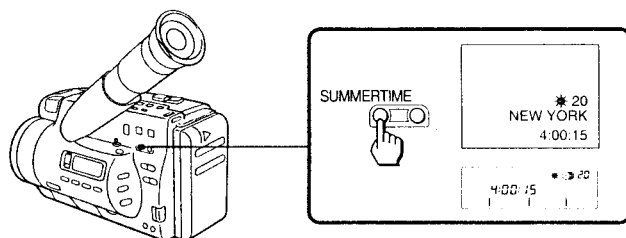


To Check the Date

Press DATE (+). To turn off the date indicator, press DATE (+) again.

To Adjust to Summer Time

Press SUMMERTIME. The * indicator appears and the time changes to summer time. To reset to standard time, press SUMMERTIME again.



To Reset to Your Home Area Time Again

Press AREA until your home area name appears.

Using the Tape Counter

During recording or playback, the digits on the tape counter indicate the elapsed recording or playback time.

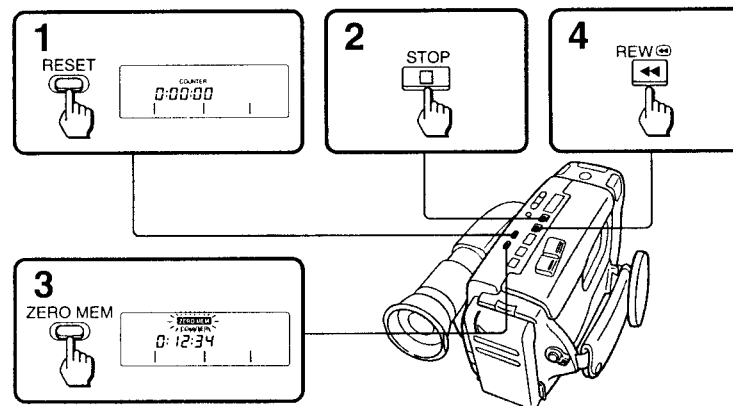
Referring to the Amount of Elapsed Time and a Particular Point

Press RESET at the beginning of the tape. The counter in the viewfinder and the display window shows "0:00:00". The counter shows the elapsed time so that you can refer to the amount of elapsed time. You can also use the counter as an index to find a particular point.

Returning to a Pre-registered Position

You can easily go back to the desired point on a tape after playback.

(1) During playback, press RESET at the point you later want to locate. The counter shows "0:00:00" in the viewfinder and the display window. (2) Press  when you want to stop playback. (3) Press ZERO MEM to stop rewinding at the counter's zero point. The "ZERO MEM" indicator flashes in the viewfinder and the display window. (4) Press . The tape stops automatically when the counter reaches approximately zero.



Notes on the tape counter

- Something must be recorded on the tape in order for the tape counter to function. Tape counter does not work on a blank tape.
- There may be a discrepancy of several seconds from the actual time.

Notes on ZERO MEM

- When you press ZERO MEM, the counter's zero point is memorized.
- This function is canceled automatically once the tape is rewound or sent forward to the point you pre-registered.
- Be sure to press ZERO MEM after stopping the tape. It does not function during recording or playing back.

Using this Function in Reverse

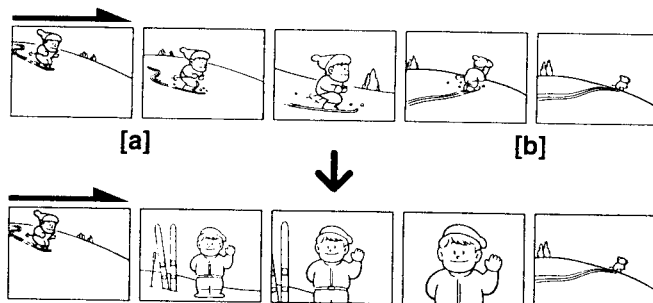
You can return to a desired position after rewinding with this function. Press RESET at the point you want to return to later. Press . Press  when you want to stop rewinding. Press ZERO MEM. Press . The tape automatically stops near the zero point you first set.

Superimposing a Title/Using the World Clock

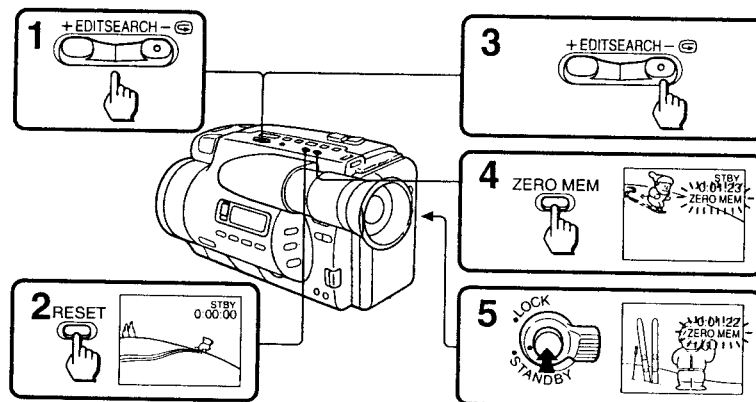
Using the World Clock/Using the Tape Counter

Inserting a Scene in the Middle of a Recorded Tape

You can insert a scene in the middle of a recorded tape by setting the starting point and ending point. A previously recorded portion will be erased.



(1) While looking in the viewfinder in Standby mode, keep pressing the + or - side of EDITSEARCH and release the button where you want to end the insertion [b]. (2) Press RESET to set the counter to zero. (3) While looking in the viewfinder, keep pressing the - side of EDITSEARCH and release the button where you want to start the insertion [a]. (4) Press ZERO MEM to stop recording of insert at the counter's zero point. (5) Press START/STOP. Insert recording begins. The insert recording stops automatically at the counter zero point.



Canceling the ZERO MEM

Press ZERO MEM. The ZERO MEM indicator disappears.

Note on the recorded picture

The picture may be distorted at the ending point when played back.

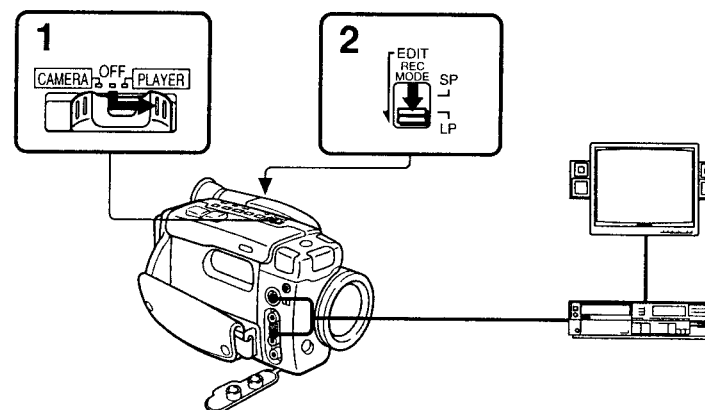
Editing onto Another Tape

You can create your own video programme by editing with any other 8 mm, Hi8, Betamax, VHS, S-VHS S-VHS, VHS-C VHSC, or S-VHS-C S-VHSC VCR that has video/audio inputs.

Before Editing

After connecting the camcorder to a TV via a VCR (p.20).

(1) While pressing the small green button on the POWER switch, slide it to PLAYER. (2) Set REC MODE/EDIT in the direction of the arrow.



Starting Editing

(1) Insert a blank tape (or a tape you want to record over) into the recording VCR. Then insert your recorded tape into the camcorder. (2) Play back the recorded tape on the camcorder until you locate the point where you want to start editing. Then set the camcorder to playback pause mode. (3) Set the recording VCR to recording pause mode. (4) Press II on the camcorder and VCR simultaneously to start editing.

To Edit More Scenes

Repeat steps 2 to 4.

To Stop Editing

Press STOP on the camcorder and VCR. When you finish editing, set REC MODE/EDIT in the direction opposite to the arrow.

Use of the EDITSEARCH button

To play back a tape in the forward or reverse direction keep pressing EDITSEARCH during playback pause. You can play back still pictures successively at specific intervals by pressing EDITSEARCH intermittently.

Note on the DATA SCREEN function

If you have displayed the viewfinder screen indicators on the TV (DATA SCREEN function), erase the indicators by pressing DATA SCREEN so that they will not be superimposed on the edited tape.

Displaying the recording date and time

You can display the recording date and time using the Data Code function (p.23). The date and time are not recorded on the edited tape as the data code signal is not output from the S VIDEO or VIDEO jack of the camcorder.

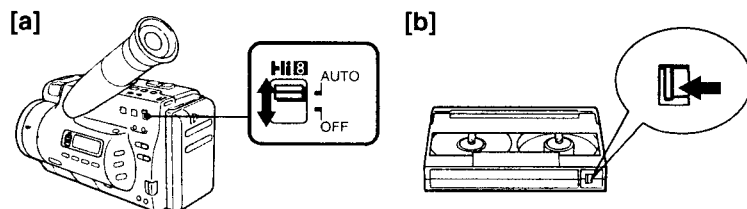
Additional Information

Usable Cassettes and Recording/Playback Modes

Selecting Cassette Types

This Hi8 system is an extension of the standard 8 mm system, and was developed for higher-quality pictures. You can use Hi8 video and standard 8 mm cassettes. When you want to record in the Hi8 system, use only Hi8 video cassettes. You cannot record on standard 8 mm cassettes in the Hi8 system. If you are going to play back the tape using a standard 8 mm video recorder/player, you should record the tape in the standard 8 mm system. If you want to use a Hi8 cassette with the standard 8 mm recording system, set Hi8 AUTO/OFF [a] to OFF.

To play back in	Record using cassette type	Set Hi8 AUTO/OFF to
Hi8	Hi8	AUTO
Standard 8	Hi8	OFF
	8	AUTO (or OFF)



To Prevent Accidental Erasure

Slide the tab [b] on the cassette to expose the red mark.

If you try to record with the red mark exposed, the and indicators flash in the viewfinder and the display window, and you cannot record on the tape. To re-record on this tape, slide the tab back out to cover the red mark.

When You Play Back

The playback mode is selected automatically according to the recording system (Hi8/standard 8 mm, SP/LP mode) in which the tape was recorded.

Notes on AFM Hi-Fi stereo

When you play back the tape, the sound is in monaural if:

- You record the tape using this camcorder, then play it back on an AFM Hi-Fi monaural video recorder/player.
- You record the tape on an AFM Hi-Fi monaural video recorder, then play it back on this camcorder.

Recording mode

When you play back a tape, the SP/LP indicator in the viewfinder shows the recording mode SP/LP.

RC time code

The camcorder automatically marks the RC time code during recording, but cannot display the RC time code. When you want to display the RC time code, use the other video equipment with the RC time code displaying function.

Maintenance Information and Precautions

Moisture Condensation

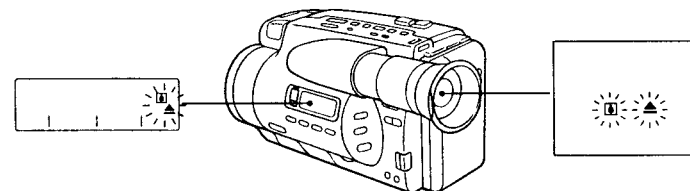
If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. If this happens, the tape may stick to the head drum and be damaged or the camcorder may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

Inside the Camcorder

When and indicators flash in the viewfinder and the display window, moisture has condensed inside the camcorder. If this happens, none of the functions except cassette ejection will work.

Eject the tape, turn off the camcorder, and leave it with the cassette compartment open for about 1 hour.

If the indicator does not light up when you turn on the power, you can use the camcorder again.



On the Surface of the Tape

If there is moisture on the surface of the tape, when you insert tape and press a tape transport button, the indicator flashes in the viewfinder and the display window. If this happens, none of the functions except cassette ejection will work.

Eject the tape and let it sit for about 1 hour.

If the indicator does not light up when you insert the tape and press a tape transport button, you can use the camcorder again.

On the Lens

No indicator will appear, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

How to Prevent Moisture Condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

- (1) Be sure to tightly seal the plastic bag containing the camcorder.
- (2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

Maintenance Information and Precautions

Video Head Cleaning

To ensure clear pictures, clean the video heads periodically. When playback pictures are "noisy" or hardly visible, the video heads may be contaminated.



[a] Slight contamination
[b] Critical contamination

If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still "noisy", repeat cleaning. (Do not repeat cleaning more than 5 times.)

Caution

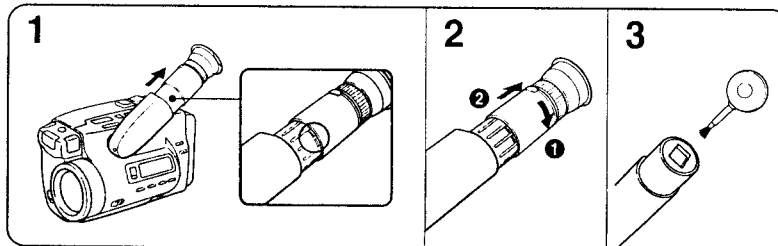
Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note

If the V8-25CLH cleaning cassette is not available in your area, consult your Sony service facility.

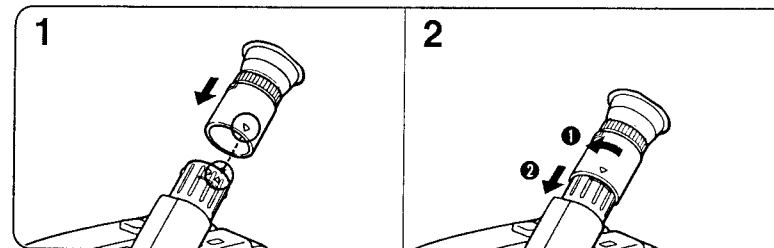
Removing Dust from Inside the Viewfinder

(1) Pull out the viewfinder barrel until the illustrated mark appears. (2) Turn it counterclockwise until it stops and pull it out. (3) Clean the surface of the cover with a blower brush.



To Reattach the Viewfinder Barrel

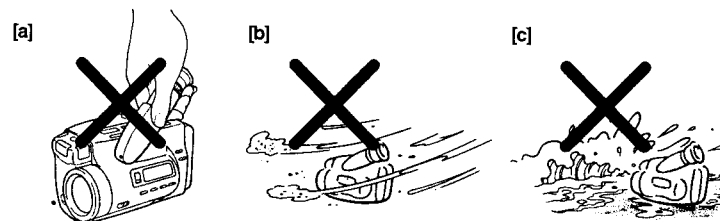
(1) Align the mark on the viewfinder barrel with the mark on the viewfinder and push in the viewfinder barrel until it clicks. (2) Turn it clockwise until it stops and push it in.



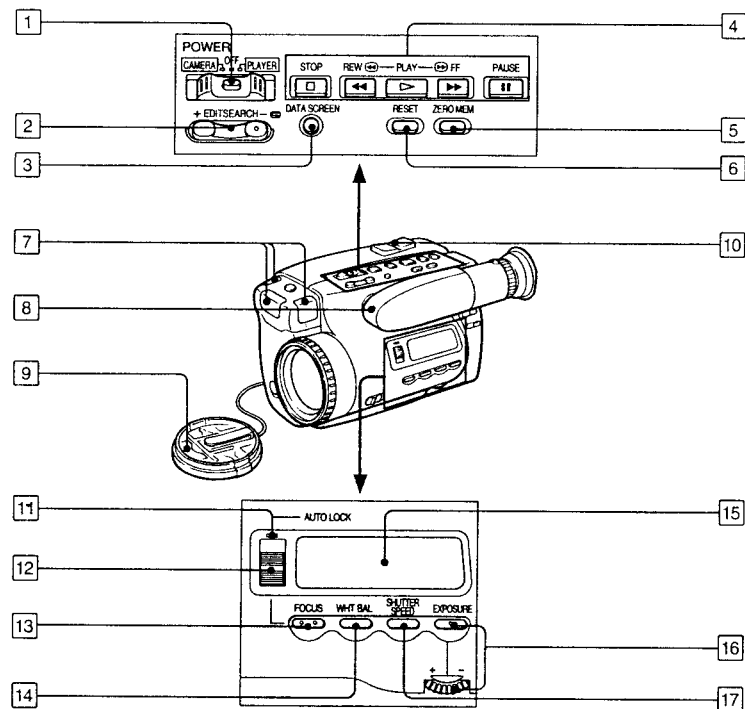
Precautions

On Camcorder Operation

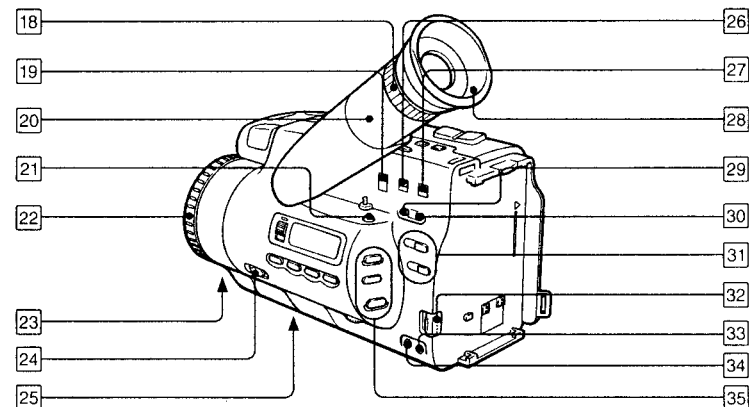
- Operate the camcorder using 6.0 V (battery pack), 7.5 V (AC power adaptor), or 9.0 V (alkaline batteries).
- For DC or AC operation, use only the accessories recommended in this manual.
- Should any solid object or liquid fall into the casing, unplug the camcorder and have it checked by qualified personnel before operating it any further.
- Do not pick up the camcorder by the viewfinder. [a]
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camcorder.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.
- Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction and sometimes the malfunction cannot be repaired. [b]
- Do not let the camcorder get wet. Keep the camcorder from rain or sea water. It may cause a malfunction and sometimes the malfunction cannot be repaired. [c]



Identifying the Parts



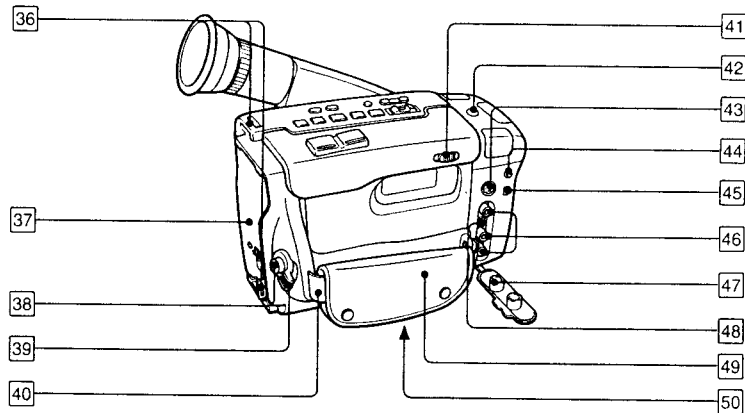
- | | |
|--|--|
| 1 POWER switch (p.11, 15, 21) | 8 Recording/battery lamp |
| 2 EDITSEARCH button (p.19, 40) | 9 Lens cap (p.14, 15) |
| 3 DATA SCREEN button (p.22) | 10 Power zoom button (p.16, 27) |
| 4 Tape transport buttons (p.21, 22) | 11 AUTO LOCK lamp (p.15, 25) |
| ▶ PLAY (playback) | 12 AUTO LOCK switch (p.15, 25) |
| ▶▶ FF (fast forward) | 13 FOCUS button (p.27) |
| ◀◀ REW (rewind) | 14 WHT BAL (white balance) button (p.29) |
| □ STOP | 15 Display window (p.51) |
| PAUSE | 16 EXPOSURE button and dial (p.32) |
| 5 ZERO MEM (zero memory) button (p.39, 40) | 17 SHUTTER SPEED button (p.31) |
| 6 RESET button (p.39, 40) | |
| 7 Built-in Microphone (stereo/zoom) | |



- | | |
|--|--|
| 18 Viewfinder lens adjustment ring (p.13) | 27 HIFI AUTO/OFF switch (p.15, 42) |
| 19 Hi-Fi SOUND switch (p.22) | 28 Eyecup (p.14) |
| 20 Viewfinder (p.51) | 29 SUMMERTIME button (p.11, 37) |
| 21 REC START/STOP button (p.14) | 30 AREA button (p.37) |
| 22 Focus ring (p.27) | 31 DATE(+) and TIME(NEXT) buttons (p.11, 18, 23, 37) |
| 23 FADER button (p.33) | 32 BATT (battery eject) knob (p.6) |
| 24 STEADY SHOT switch (p.17) | 33 PHONES (headphones) jack (stereo minijack) (p.19) |
| 25 Lithium battery compartment (p.9) | 34 Ⓛ REMOTE control jack (mini-mini-jack) |
| 26 REC (recording) MODE/EDIT switch (p.15, 41) | Ⓛ stands for Local Application Control Bus System. The Ⓛ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the connectors indicated as CONTROL L or REMOTE. |
| 35 SUPERIMPOSE buttons (p.34, 35, 36) | |
| MEMORY button | |
| COLOUR/MODE button | |
| SUPERIMPOSE ON/OFF button | |

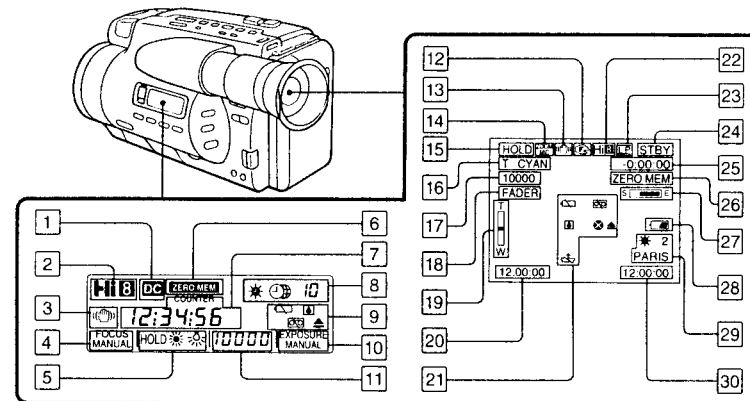
Mode	Recording	Playback	Editing
Setting	EDIT REC MODE SP ↓ LP	EDIT REC MODE SP ↓ LP	EDIT REC MODE SP ↓ LP
Function	Recording mode switch	EDIT switch	

Identifying the Parts



- | | |
|---|--|
| 36 Hooks for shoulder strap (p.53) | 45 BUILT-IN MIC switch (p.16) |
| 37 Battery mounting surface (p.6) | 46 VIDEO/AUDIO input/output jacks (phono jacks) (p.20) |
| 38 START/STOP button (p.15) | 47 Jack cover |
| 39 STANDBY switch (p.11, 15) | 48 RFU DC OUT (RFU adaptor DC output) jack (p.20) |
| 40 Grip strap (p.14) | 49 Grip strap cover |
| 41 Lid lock (p.12) | 50 Tripod receptacle (p.14) |
| 42 Remote control sensor (p.52) | |
| 43 S VIDEO input/output jack (p.20) | |
| 44 MIC jack (PLUG IN POWER) (stereo mini jack)
Connect an external stereo microphone (not supplied). | |

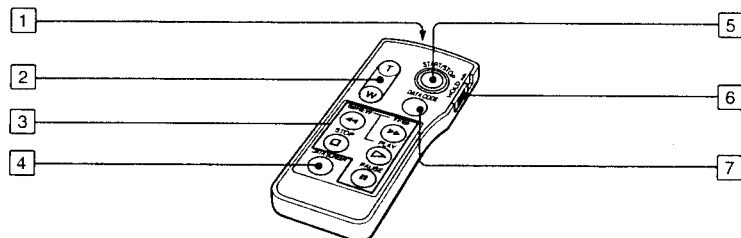
Indicators in the Display Window and the Viewfinder



- | | |
|---|--|
| 1 Data code indicator (p.23) | 18 Appears when FADER is pressed (p.33) |
| 2 Playing back or recording in Hi8 format | 19 Power zoom indicator/Exposure indicator (p.16, 32) |
| 3 Steady Shot function indicator (p.17) | 20 Data code (p.23) |
| 4 Manual focusing (p.27) | 21 Warning indicators (p.58) |
| 5 White balance mode (p.29) | 22 Appears while recording in Hi8 system |
| 6 Appears when ZERO MEM is pressed (p.39, 40) | 23 Indicates the recording mode when recording/playing back a tape
When you play back a tape recorded in LP mode, the LP indicator appears in the viewfinder. |
| 7 Tape counter, time or date indicator | 24 Tape transport mode |
| 8 World clock indicators (p.37) | 25 Tape counter |
| 9 Warning indicators (p.58) | 26 Appears when ZERO MEM is pressed (p.39, 40) |
| 10 Manual exposure indicator (p.32) | 27 Tape remaining indicator
S [] E → S [] E → S [] E
→ 5min → 1min → 0min |
| 11 Shutter speed (p.31) | 28 Battery remaining indicator (p.7)
[] → [] → [] → [] → [] |
| 12 Manual focusing (p.27) | 29 World clock indicators (p.37) |
| 13 Steady Shot function indicator (p.17) | 30 Date or Time |
| 14 Appears when the BUILT-IN MIC is set to ZOOM MIC. (p.16) | |
| 15 White balance mode (p.29) | |
| 16 Title display mode and colour (p.35) | |
| 17 Shutter speed (p.31) | |

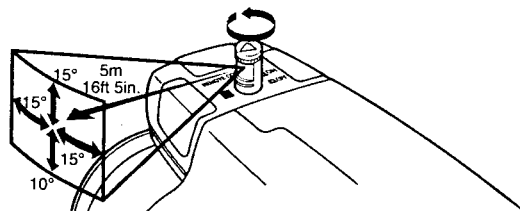
Identifying the Parts

Wireless Remote Commander



- | | |
|--|--|
| <p>1 Transmitter
Point toward the remote sensor to control the camcorder after turning the POWER switch on the camcorder.</p> <p>2 Power zoom button</p> <p>3 Tape transport buttons (p.21, 22)</p> <p>4 DATA SCREEN button (p.22)</p> | <p>5 START/STOP button</p> <p>6 HOLD switch
Slide in the direction of the arrow to prevent the buttons from being accidentally pressed. Before using this Remote Commander, slide in the direction opposite to the arrow.</p> <p>7 DATA CODE button (p.23)</p> |
|--|--|

Remote Control Direction

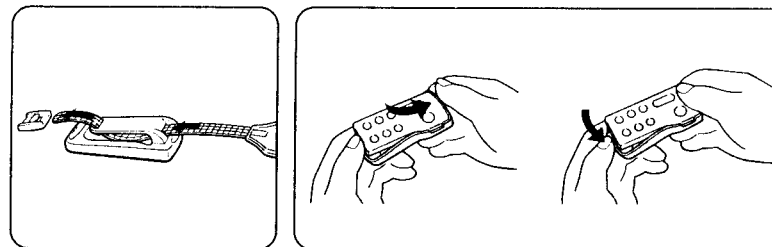


Notes on the Remote Commander

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works at commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VTRs to avoid remote control misoperation. If you use another Sony VTR at commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VTR with black paper.

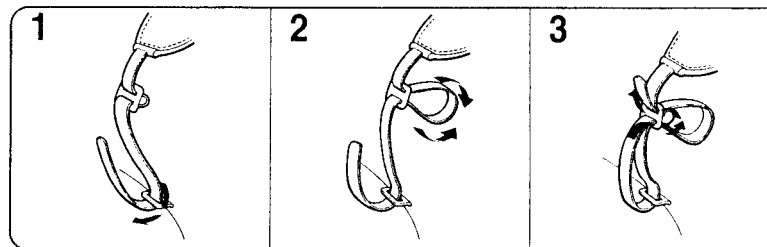
Using the Remote Commander Holder

You can slide the Remote Commander holder onto the shoulder strap.



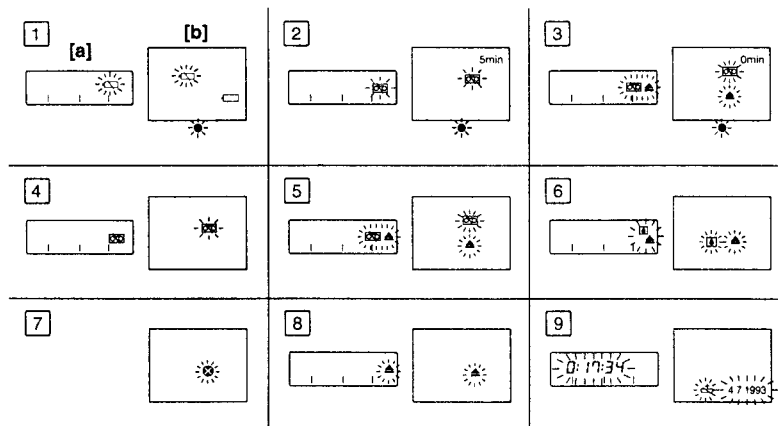
Attaching the Shoulder Strap

Attach the supplied shoulder strap to the hooks for the shoulder strap (p.50).



Warning Indicators

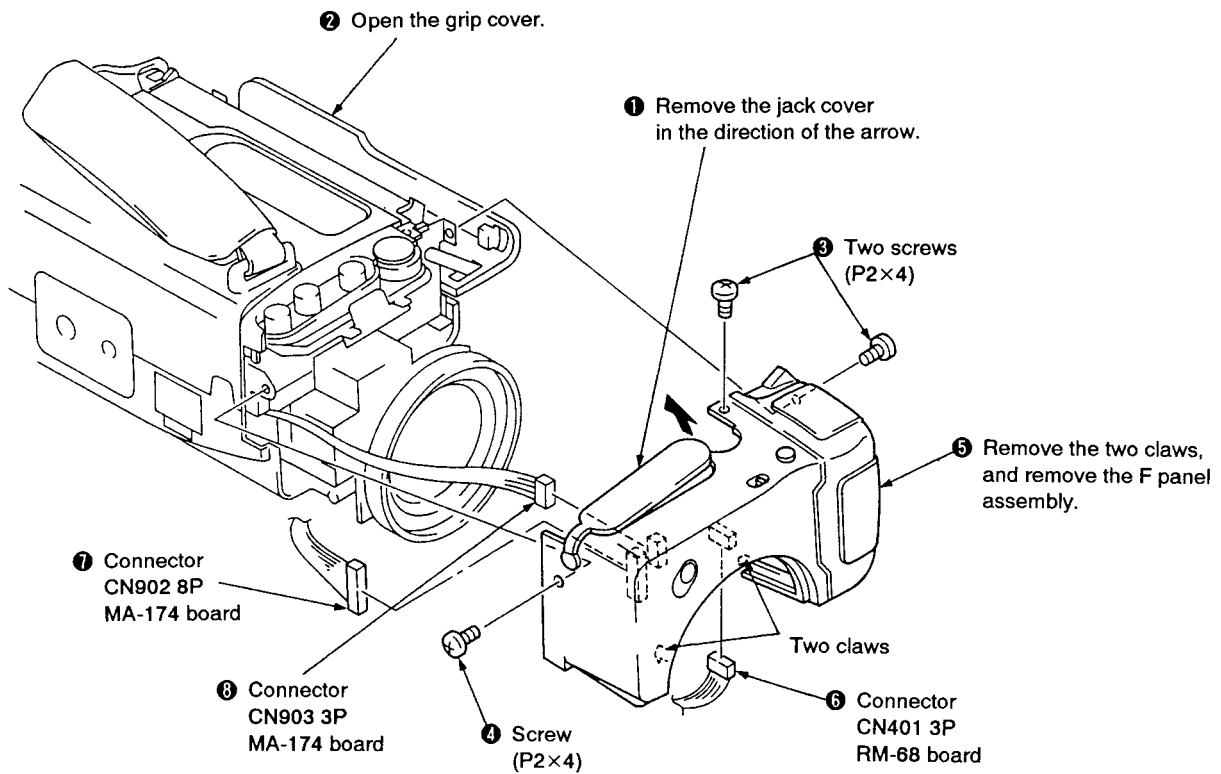
If indicators flash in the display window [a] or the viewfinder [b], or a caution lamp on the camcorder flashes, check the following:



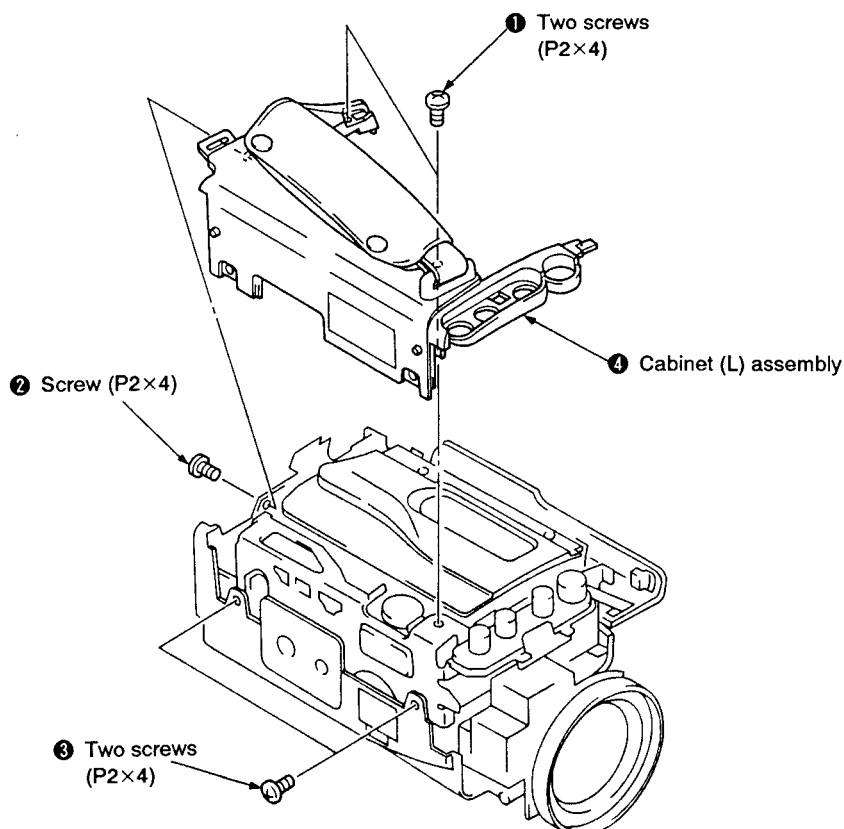
- | | |
|---|---|
| <p>1 Battery remaining
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.</p> <p>2 The tape is near the end.</p> <p>3 The tape has run out.</p> <p>4 No tape has been inserted.</p> <p>5 The tab on the tape is out (red) (p.42).</p> | <p>6 Moisture condensation has occurred (p.43).</p> <p>7 The video heads may be contaminated (p.44).</p> <p>8 Some other trouble has occurred.
Disconnect the power source and contact your Sony dealer or local authorized facility.</p> <p>9 The lithium battery is weak or the lithium battery is not installed (p.9).</p> |
|---|---|

SECTION 2 DISASSEMBLY

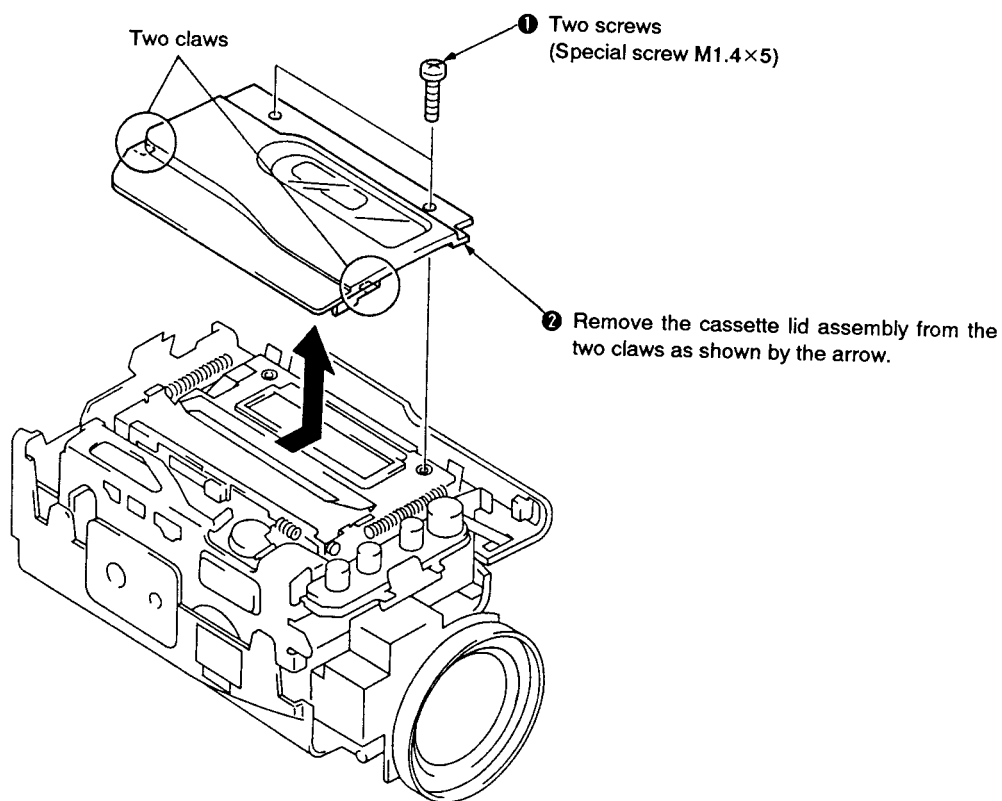
2-1. REMOVAL OF F PANEL ASSEMBLY



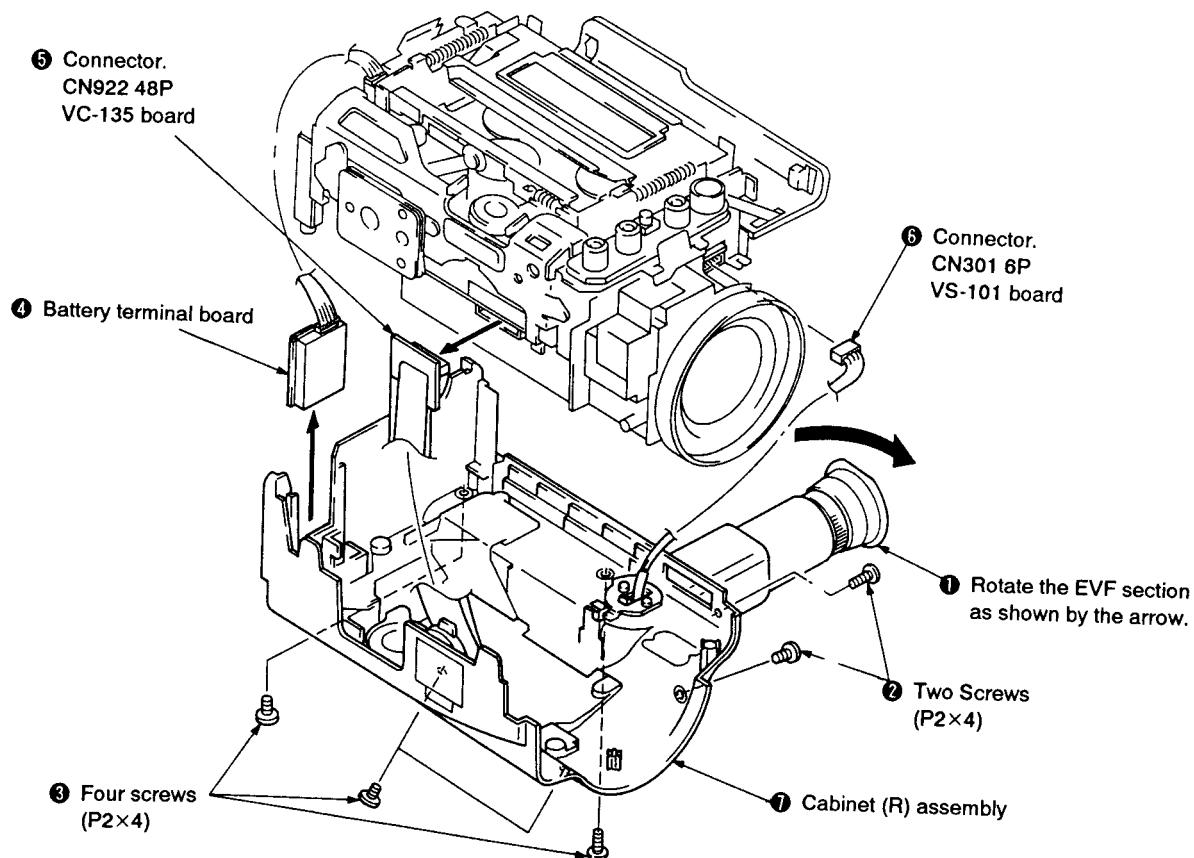
2-2. REMOVAL OF CABINET (L) ASSEMBLY



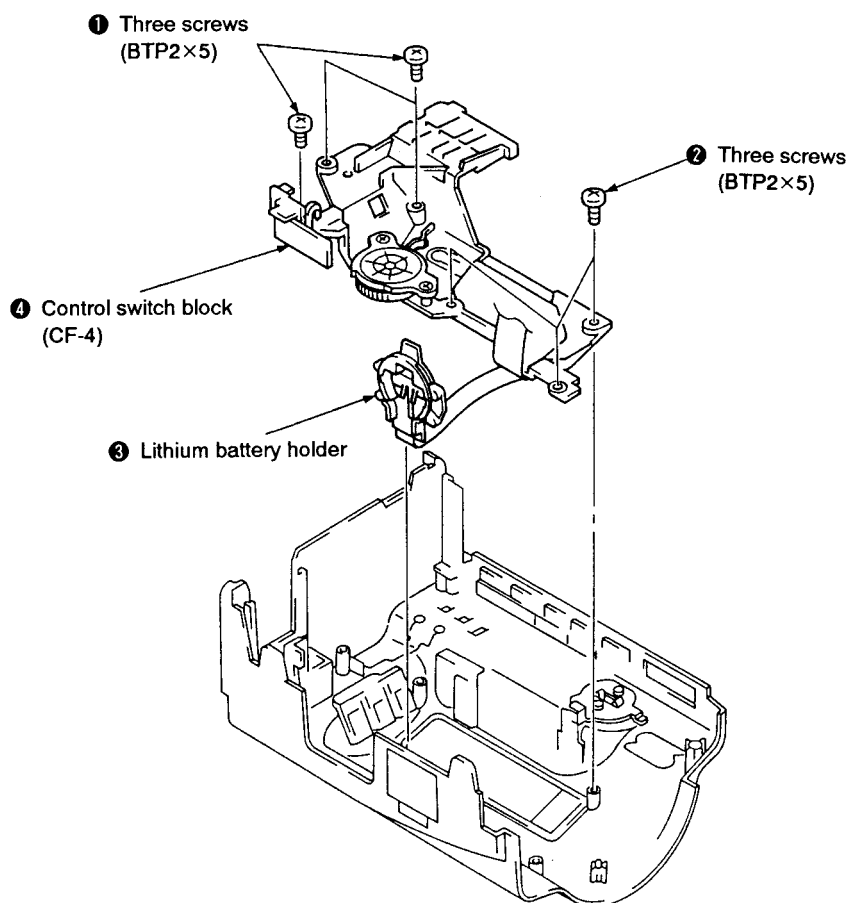
2-3. REMOVAL OF CASSETTE LID ASSEMBLY



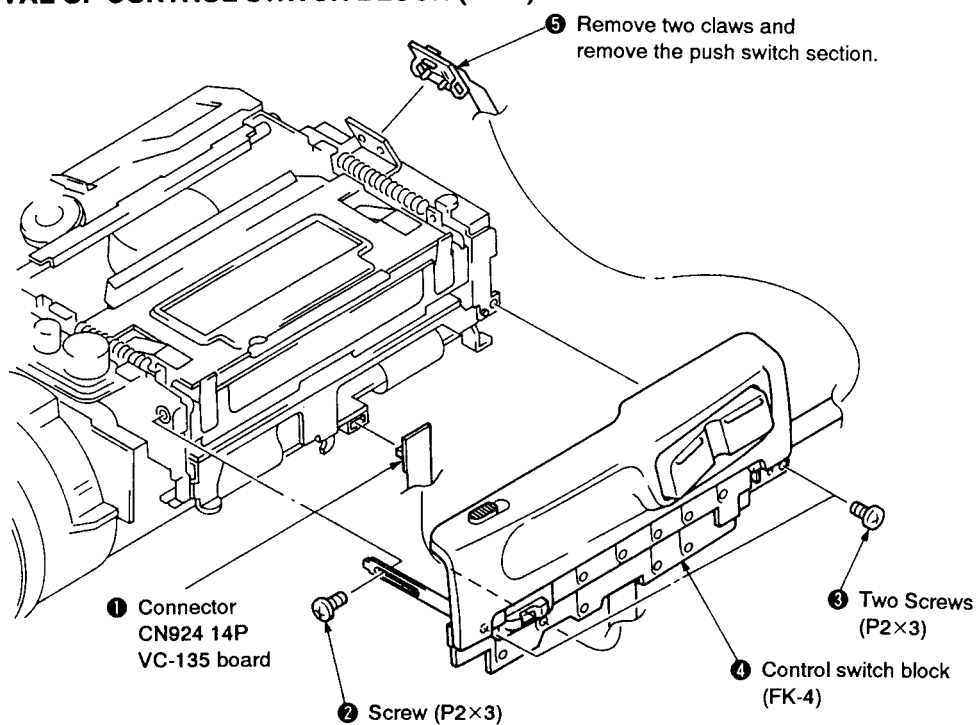
2-4. REMOVAL OF CABINET (R) ASSEMBLY



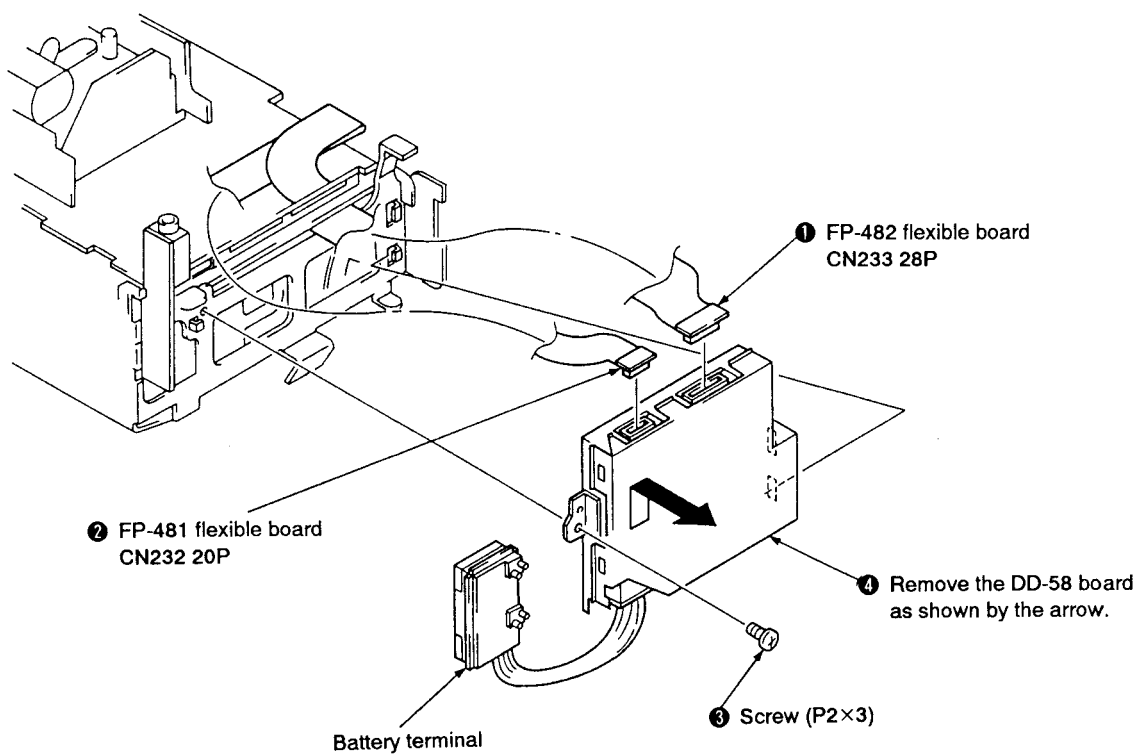
2-5. REMOVAL OF CONTROL SWITCH BLOCK (CF-4)



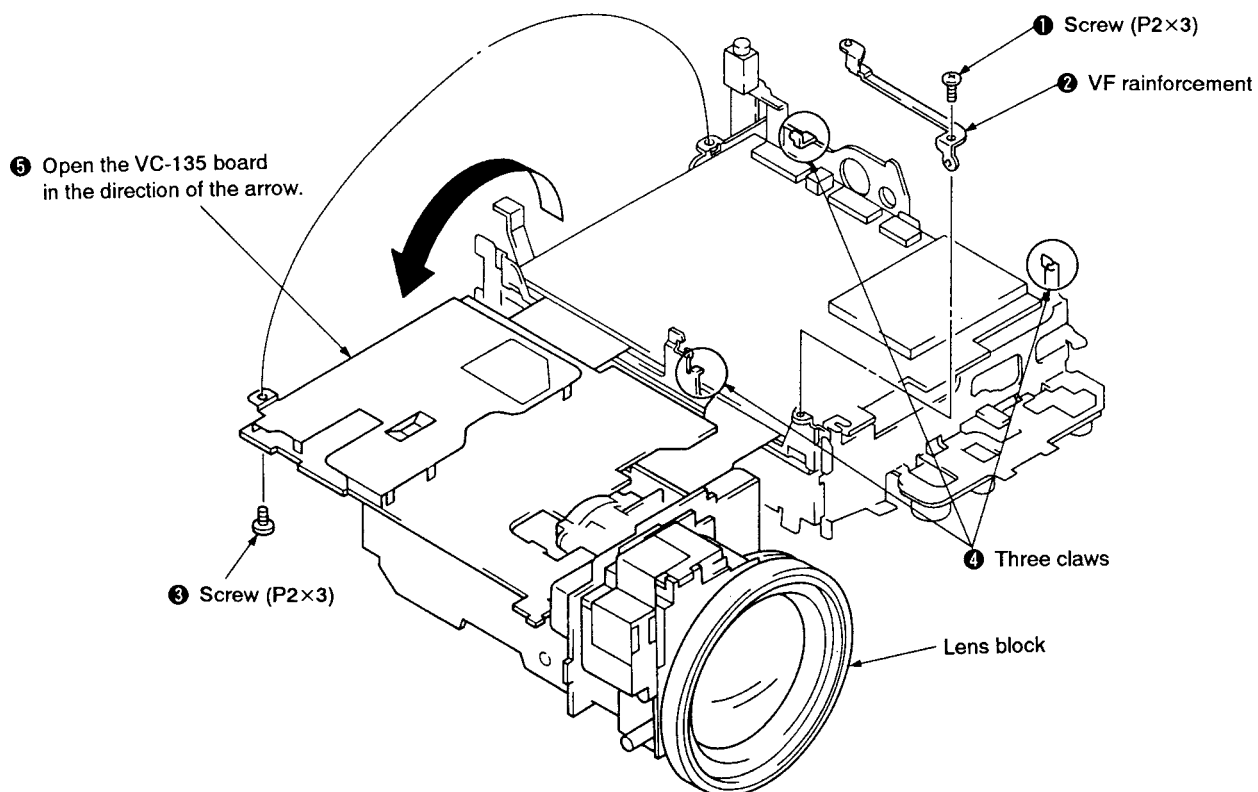
2-6. REMOVAL OF CONTROL SWITCH BLOCK (FK-4)



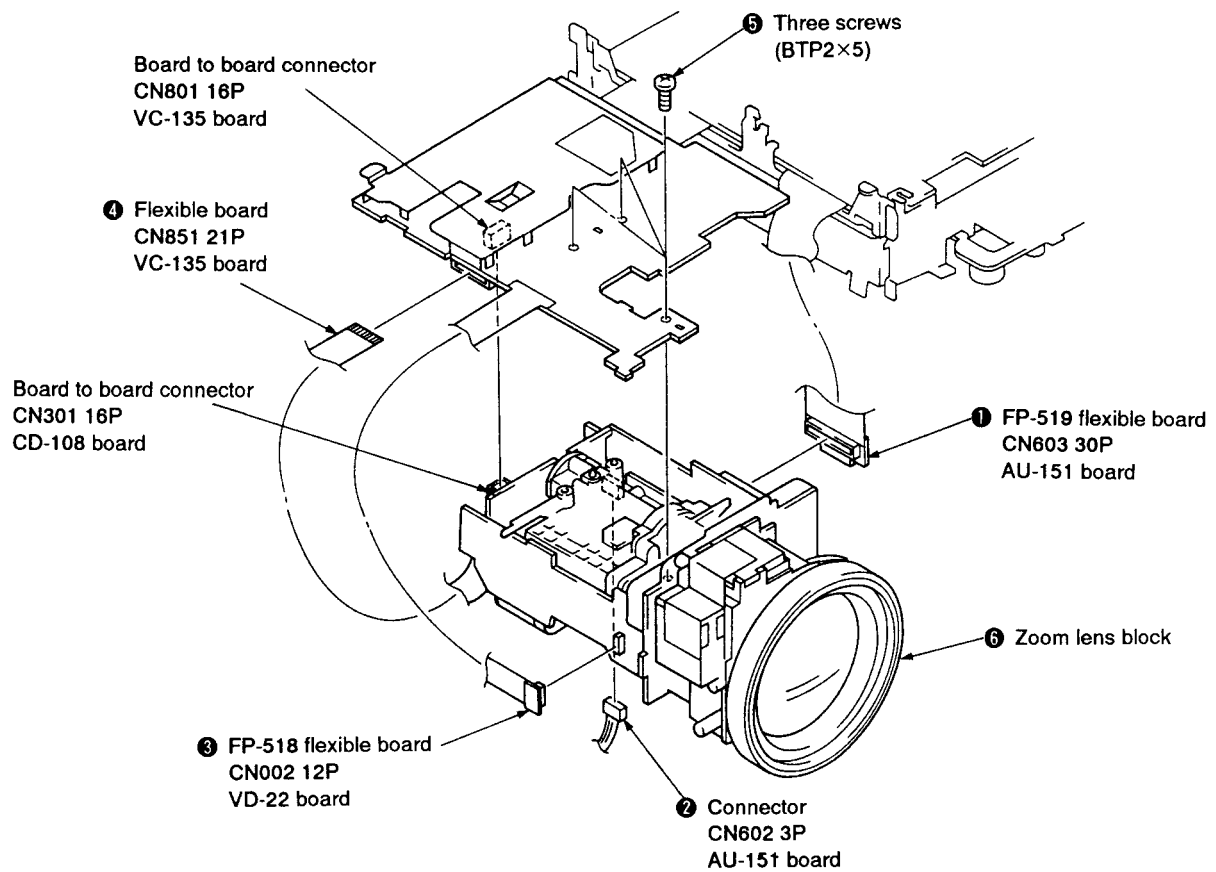
2-7. REMOVAL OF DD-58 BOARD (DC-DC CONVERTER UNIT)



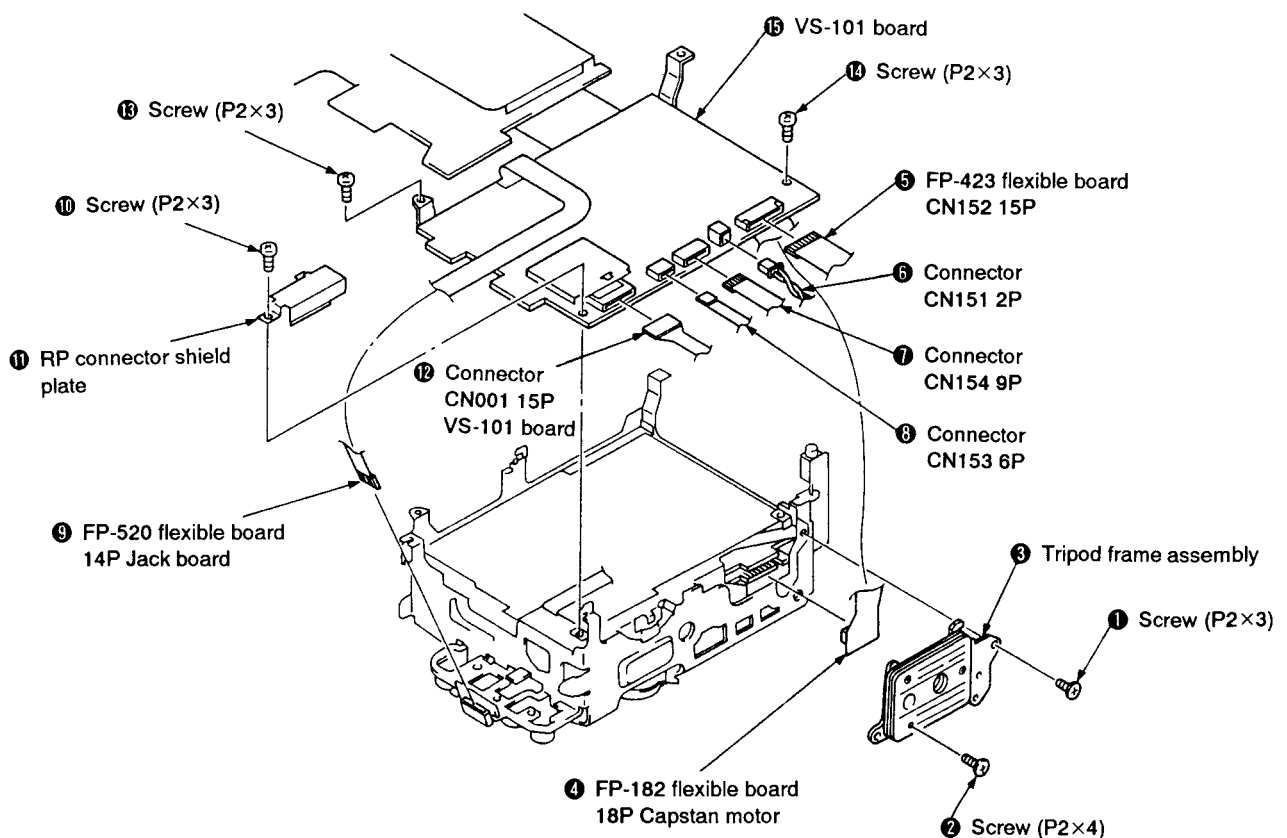
2-8. OPENING OF VC-135 BOARD



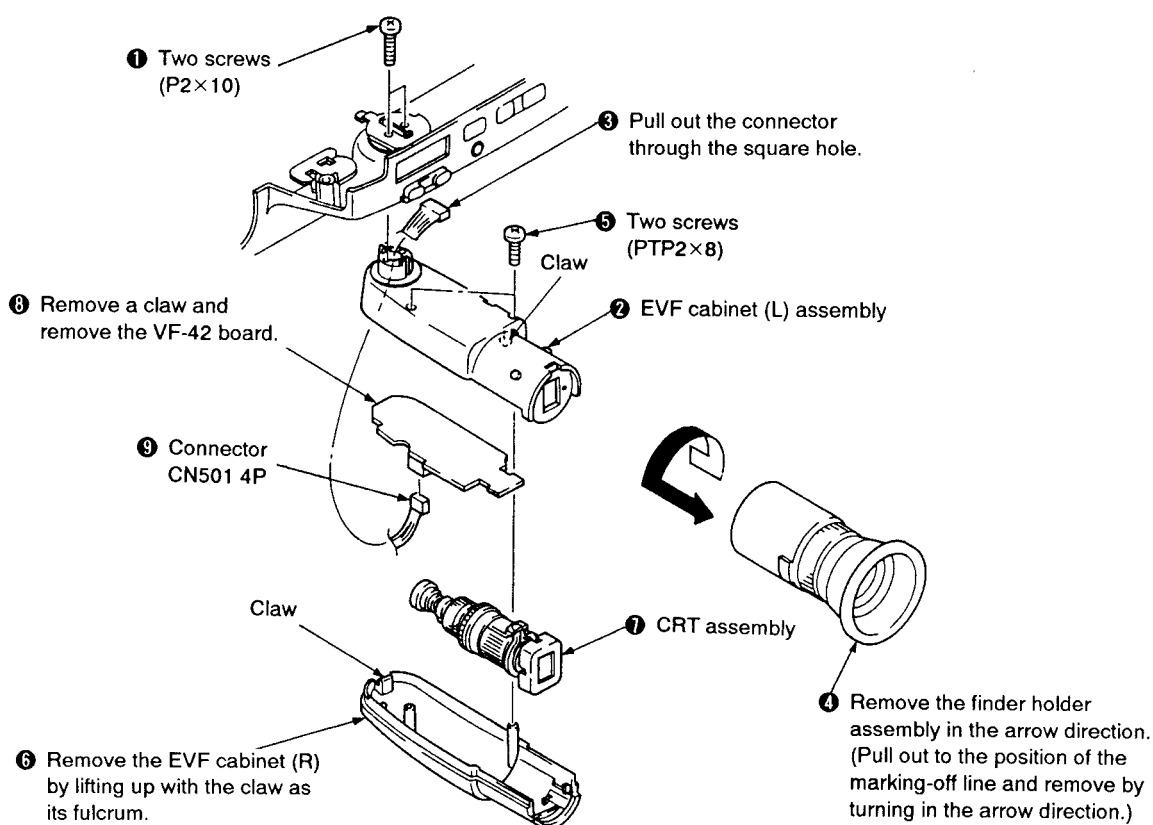
2-9. REMOVAL OF ZOOM LENS ASSEMBLY



2-10. REMOVAL OF VS-101 BOARD



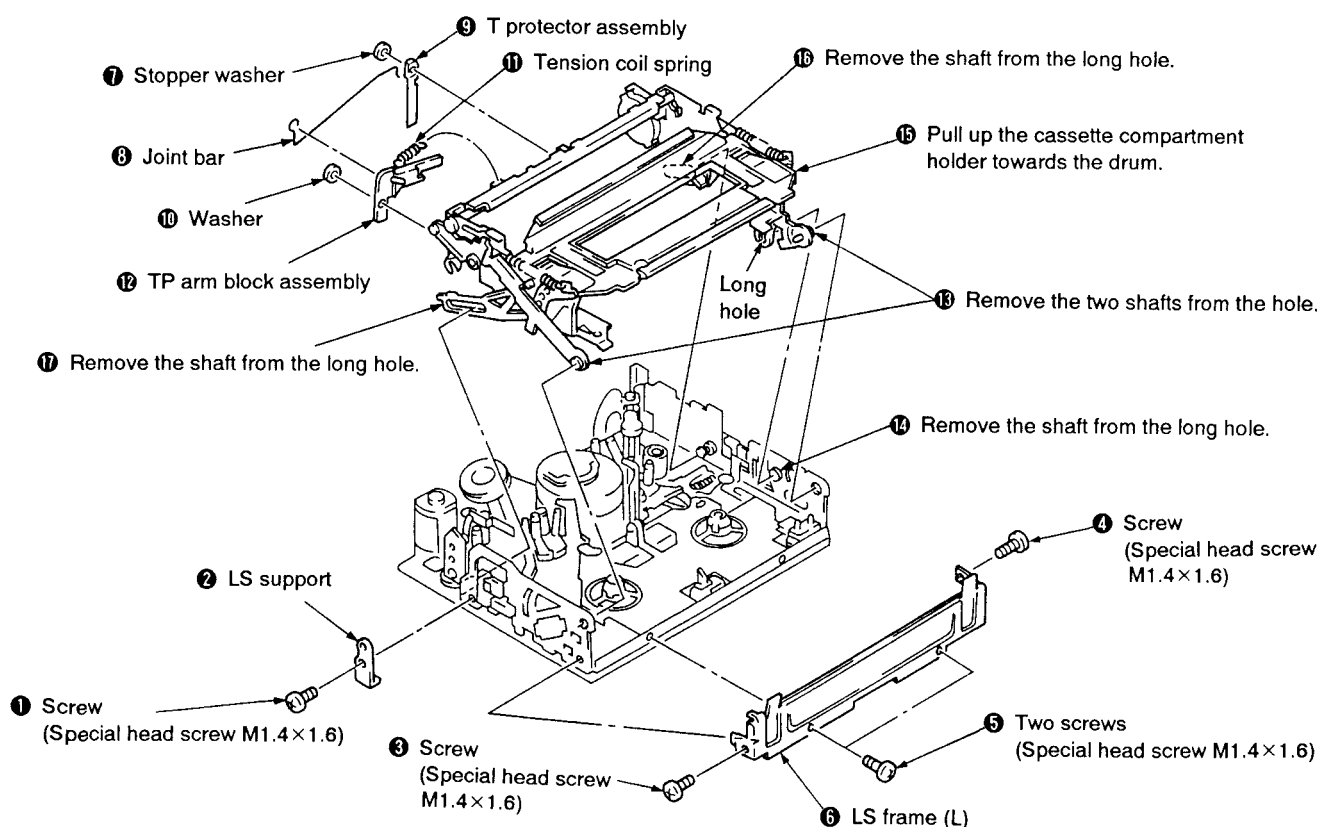
2-11. REMOVAL OF EVF ASSEMBLY (VF-42 BOARD)



2-12. REMOVAL OF CASSETTE COMPARTMENT HOLDER ASSEMBLY

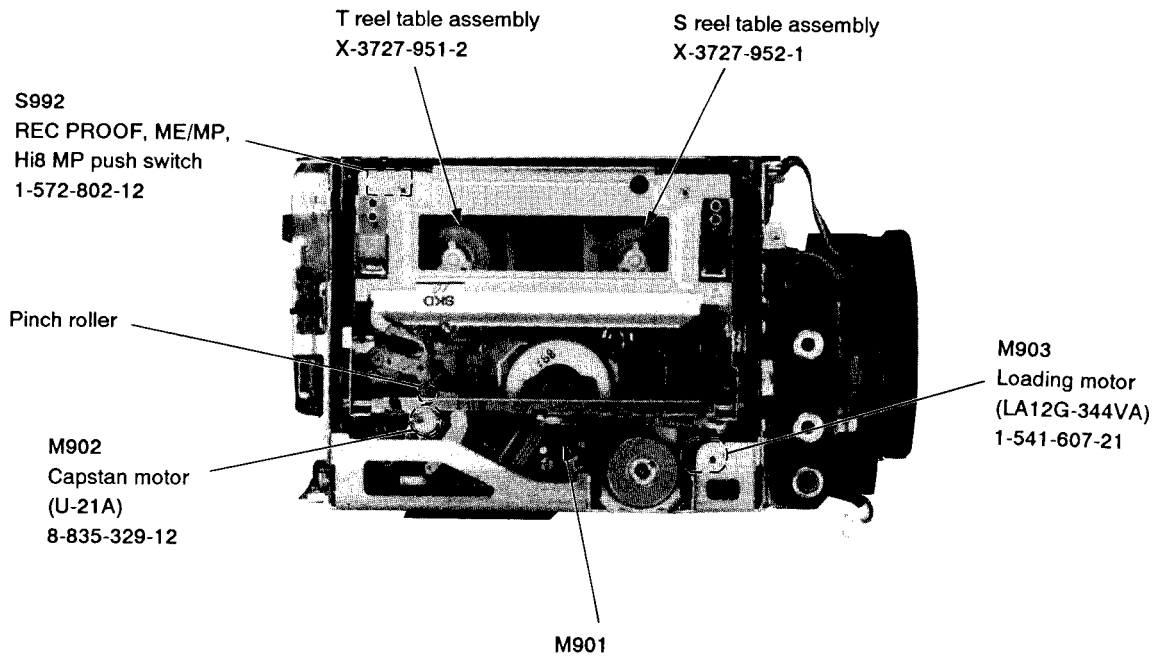
In the beginning, set to **USE** mode.

(When setting to **USE** mode, see "2-4. Handling of Mode Selector" in "8 mm video mechanical adjustment manual II [FL Mechanism (Q mechanism)]".)



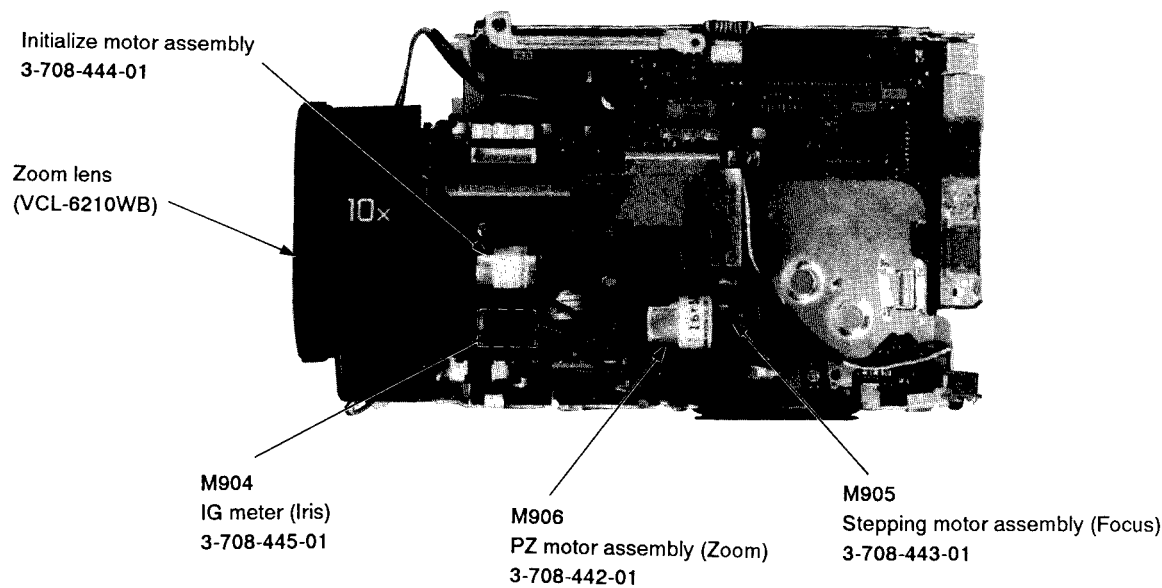
2-13. INTERNAL VIEWS

— Left Side —



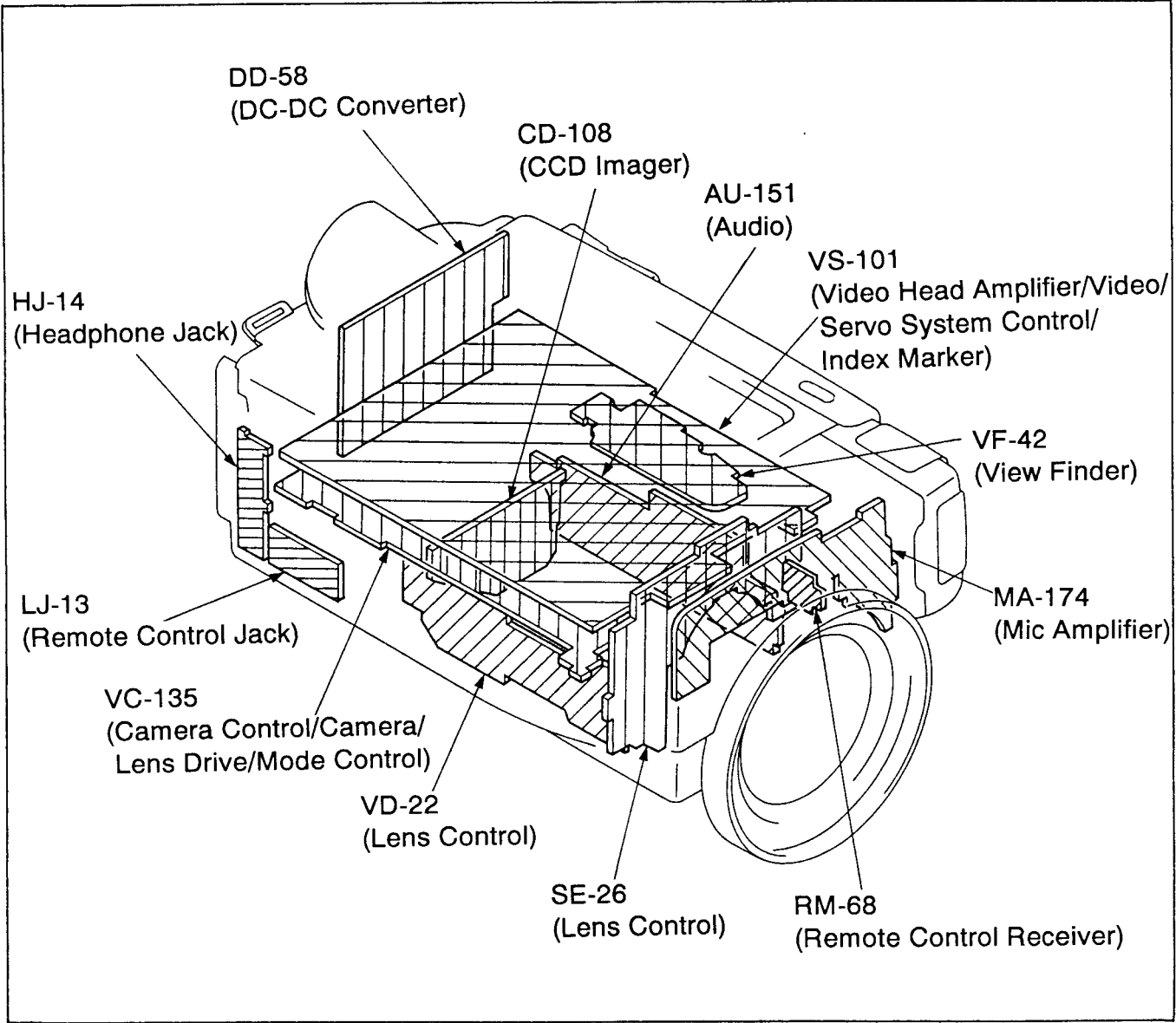
Drum Assembly	A-7048-653-A (DGH-80D-R)
Upper Rotary Drum Assembly	A-7049-461-A (DGR-80-R-(1)) (Color mark:Green, Green/Red, Black, Black/Red)
	A-7049-464-A (DGR-80-R-(2)) (Color mark:Red, Red/Red, Blue, Blue/Red)

— Right Side —

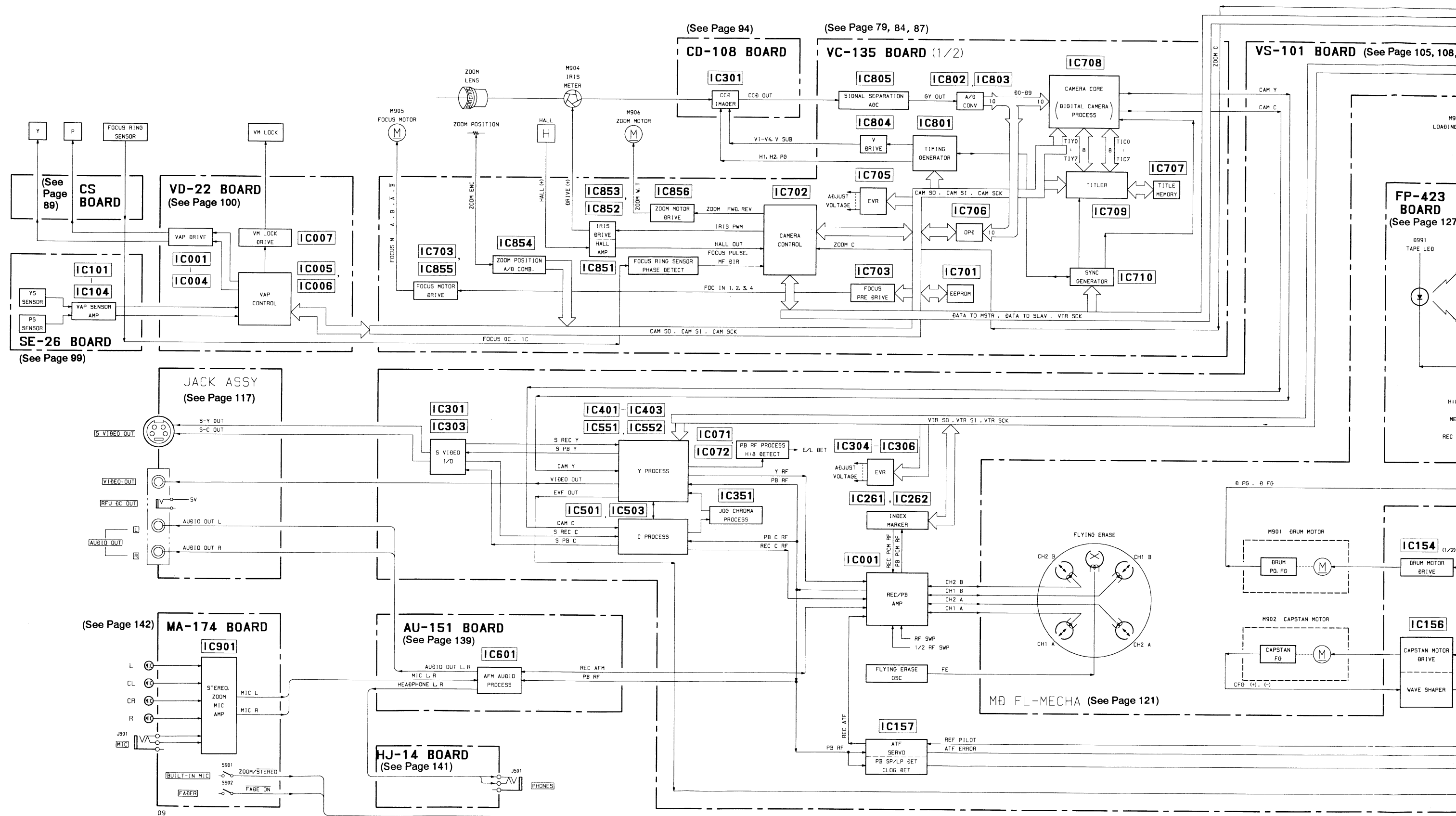


SECTION 3
DIAGRAMS

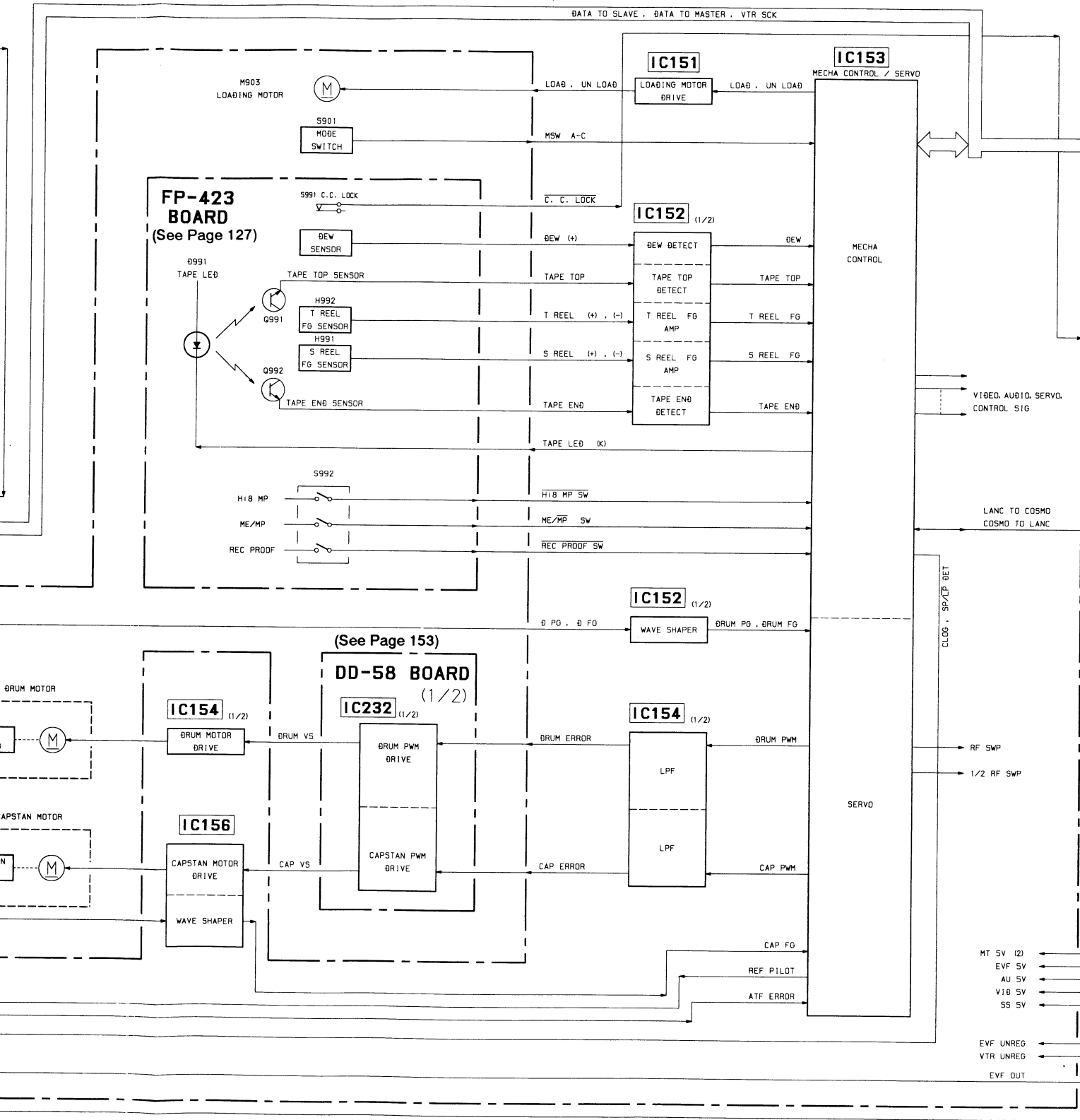
3-1. CIRCUIT BOARDS LOCATION



3-2. OVERALL BLOCK DIAGRAM

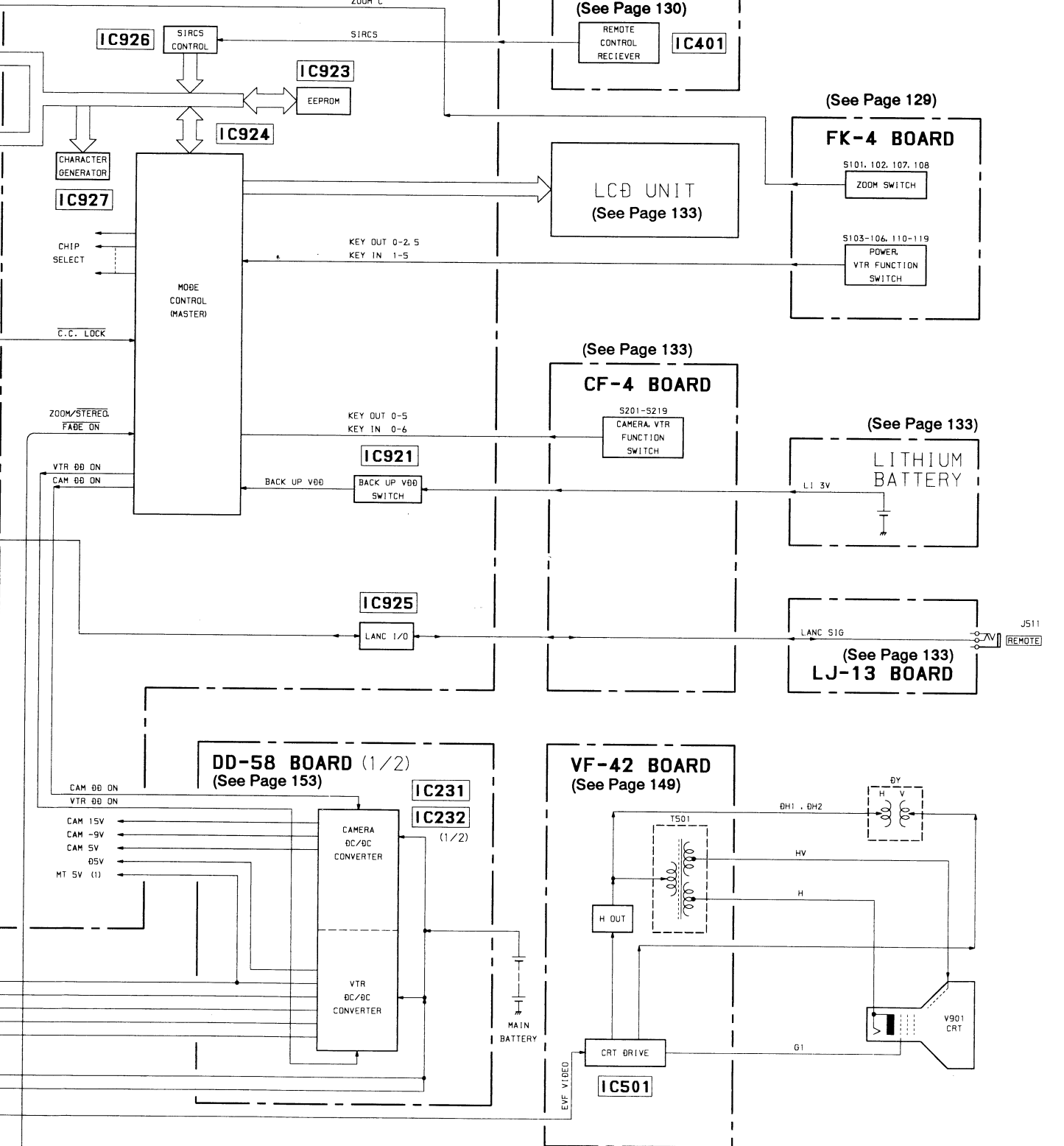


01 BOARD (See Page 105, 108, 111, 116, 119, 123)



(See Page 90)

VC-135 BOARD (1/2)

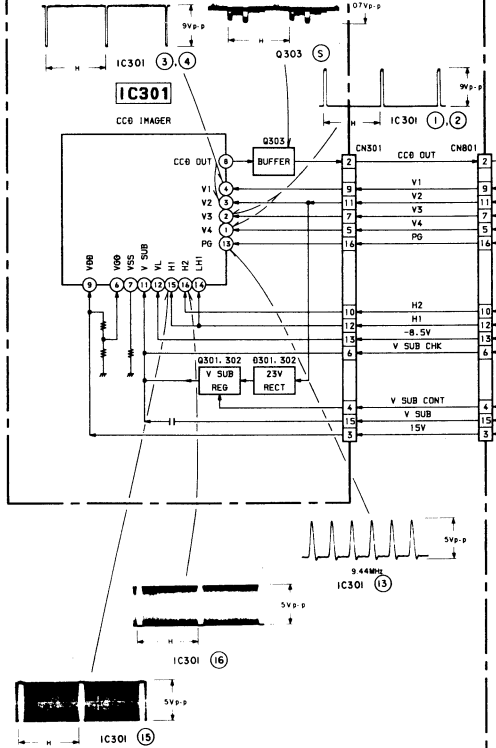


3-3. CAMERA (1) BLOCK DIAGRAM

VC-135 BOARD
(See Page 79, 84, 87)

(See Page 94)

CD-108 BOARD



IC804

V DRIVE

IC801

TIMING GENERATOR

IC805

SIGNAL SEPARATION

AGE/IRIS CONTROL

IC803

A/B BIAS AMP

IC802

CLAMP

IC806

DPB

IC702

CAMERA CONTROL

IC703

FOCUS PRE DRIVER

IC851

FOCUS RING SENSOR PHASE DETECT

IC701

EEPROM

IC710

SYNC GENERATOR

IC711

HALF SPEED PH

IC706

DPB

IC707

FOCUS PULSE

IC708

FOCUS PULSE

IC709

FOCUS PULSE

IC712

FOCUS PULSE

IC713

FOCUS PULSE

IC714

FOCUS PULSE

IC715

FOCUS PULSE

IC716

FOCUS PULSE

IC717

FOCUS PULSE

IC718

FOCUS PULSE

IC719

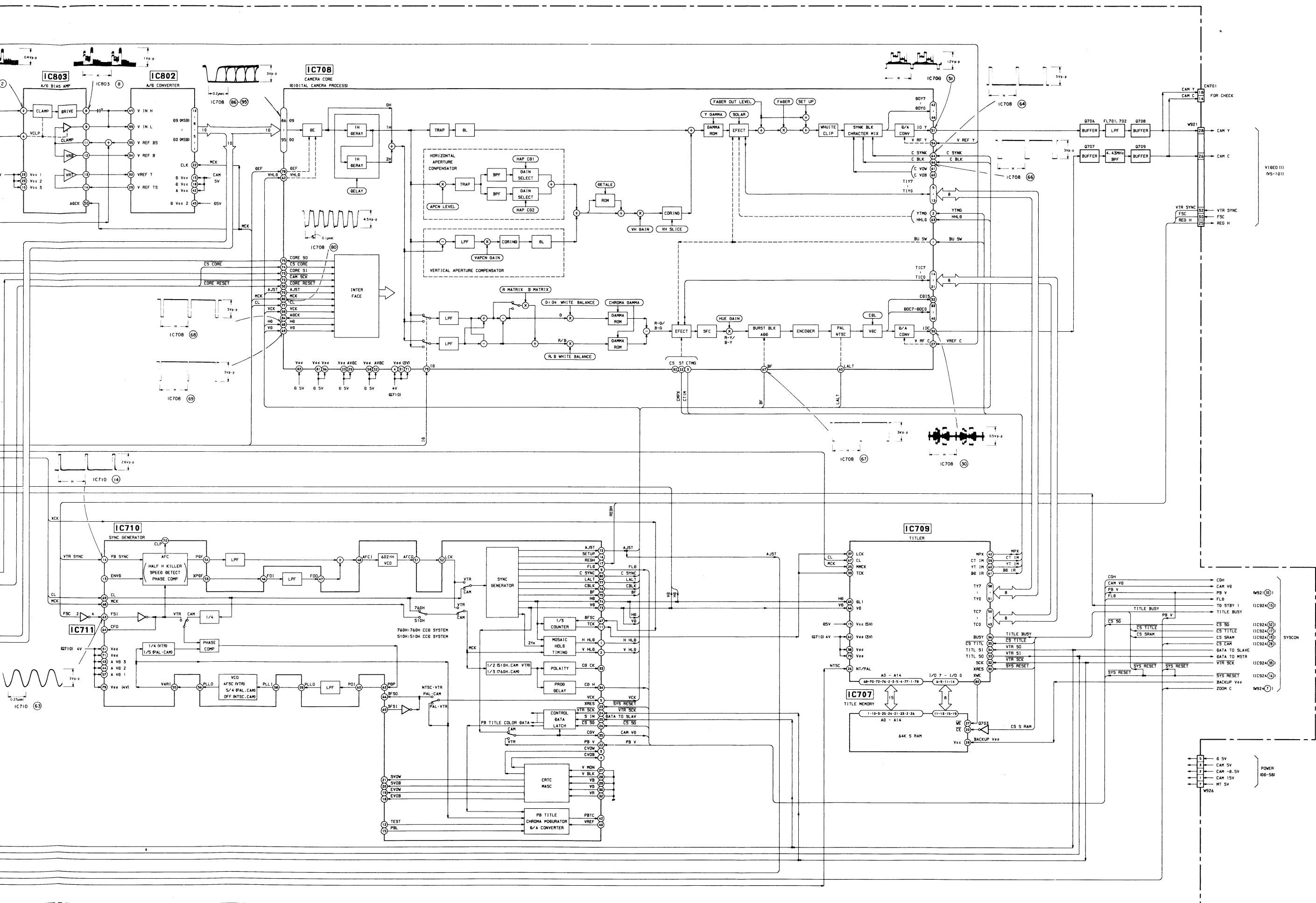
FOCUS PULSE

IC720

FOCUS PULSE

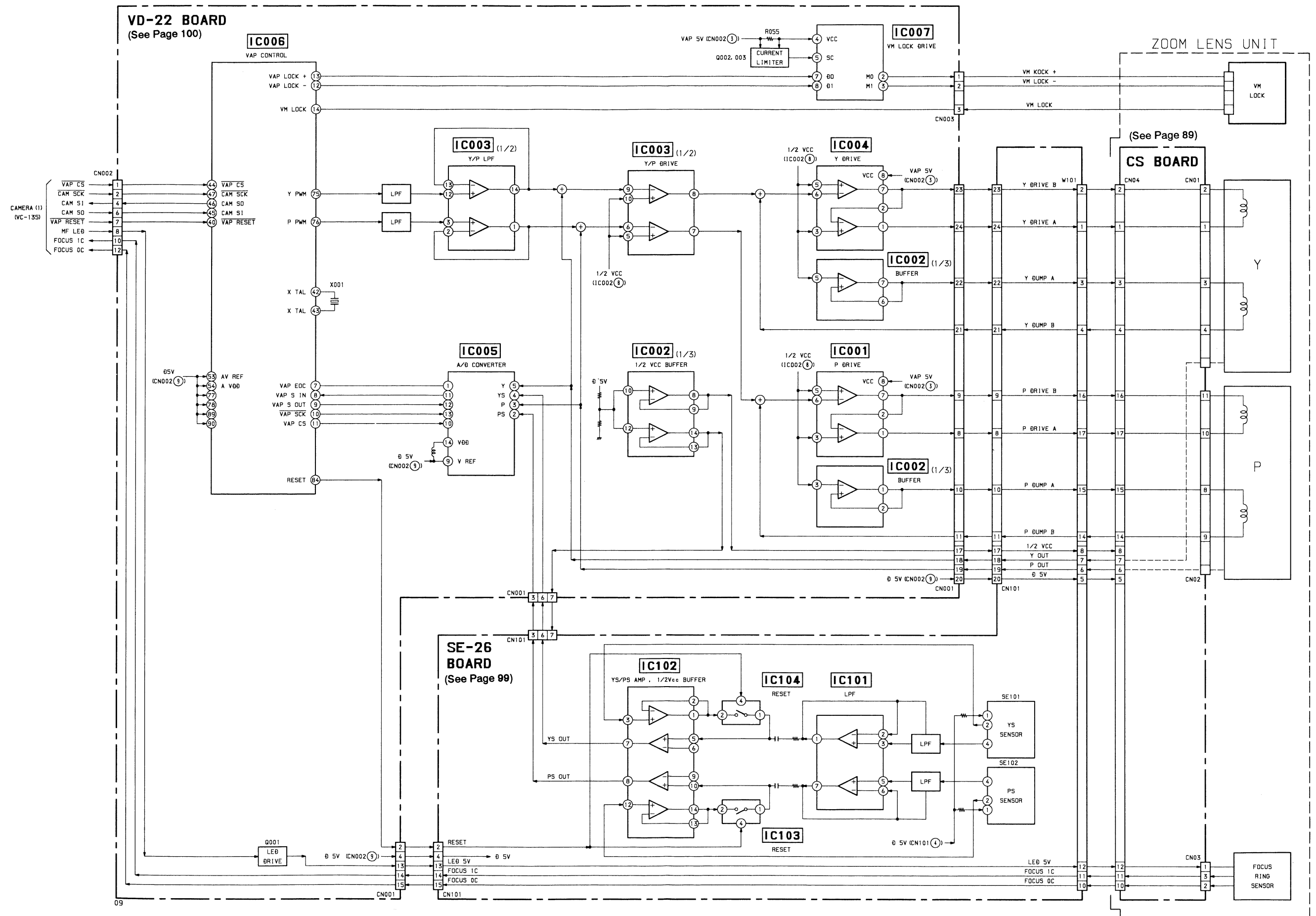
IC721

FOCUS PULSE



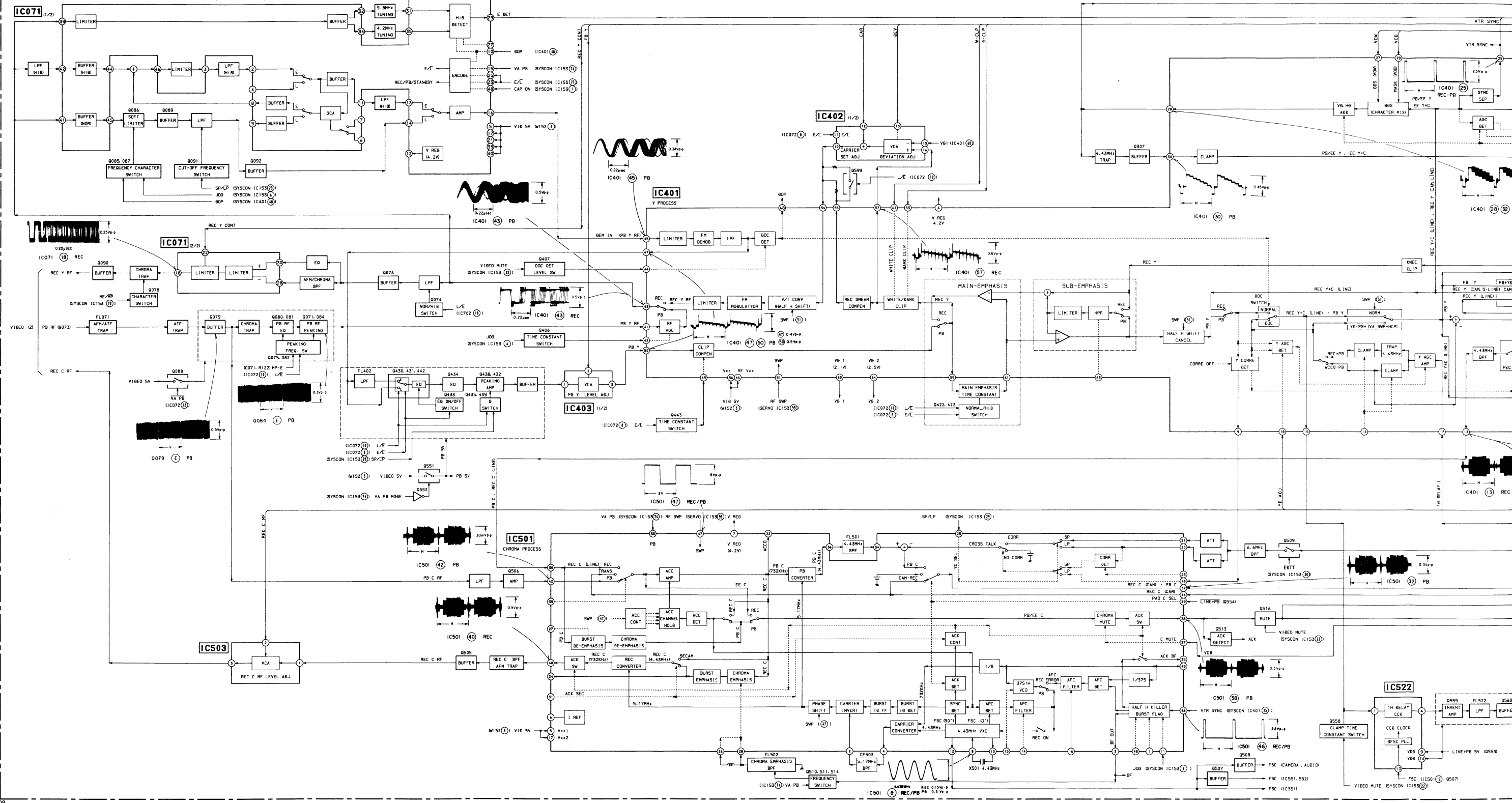


3-5. CAMERA (3) BLOCK DIAGRAM



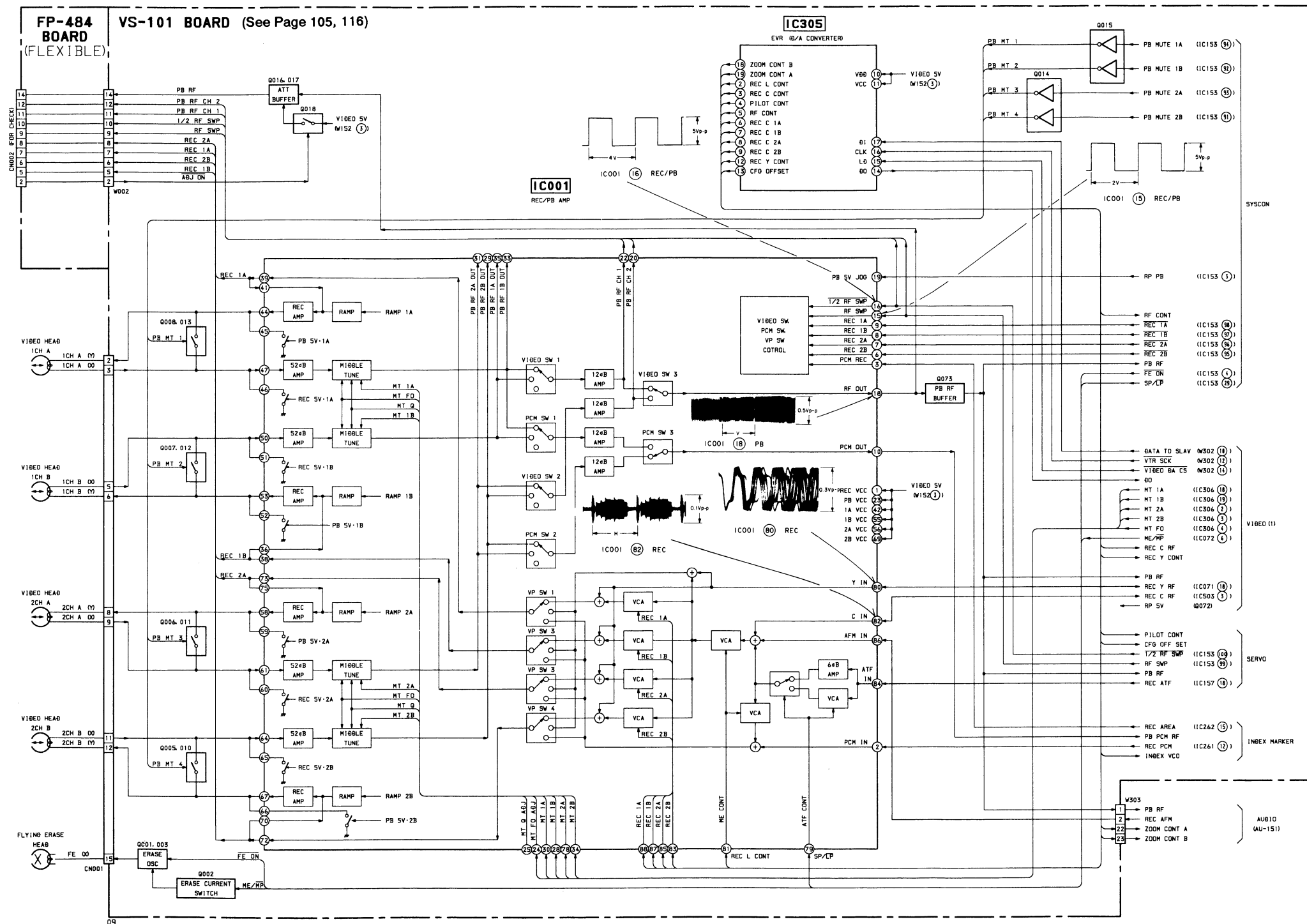
3-6. VIDEO (1) BLOCK DIAGRAM

VS-101 BOARD (See Page 105, 108, 111, 116, 119, 123)

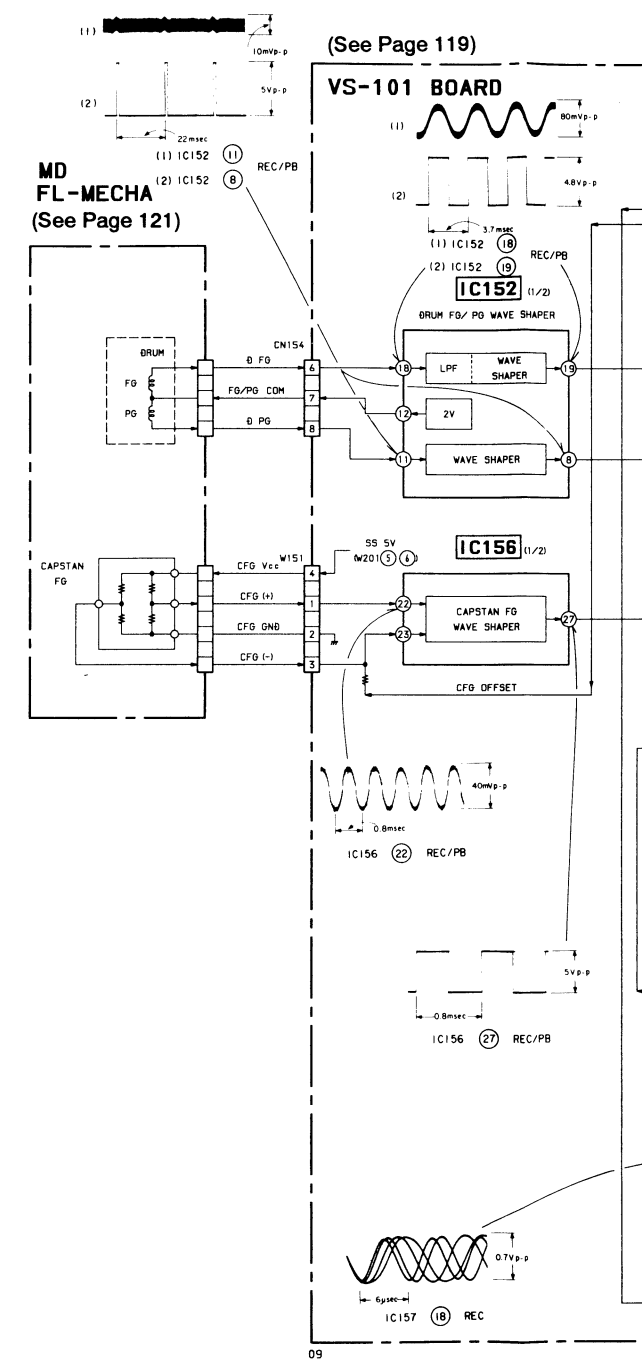


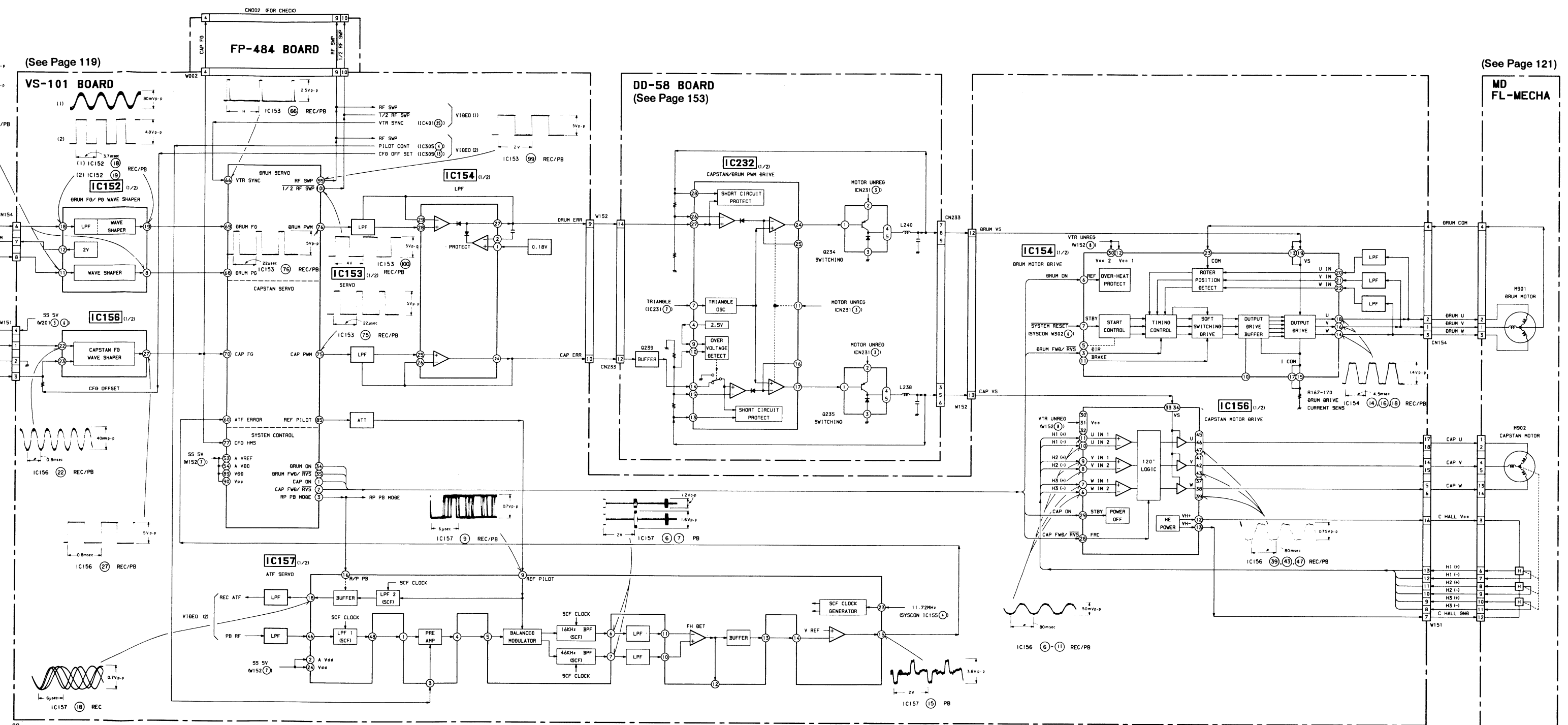


3-7. VIDEO (2) BLOCK DIAGRAM

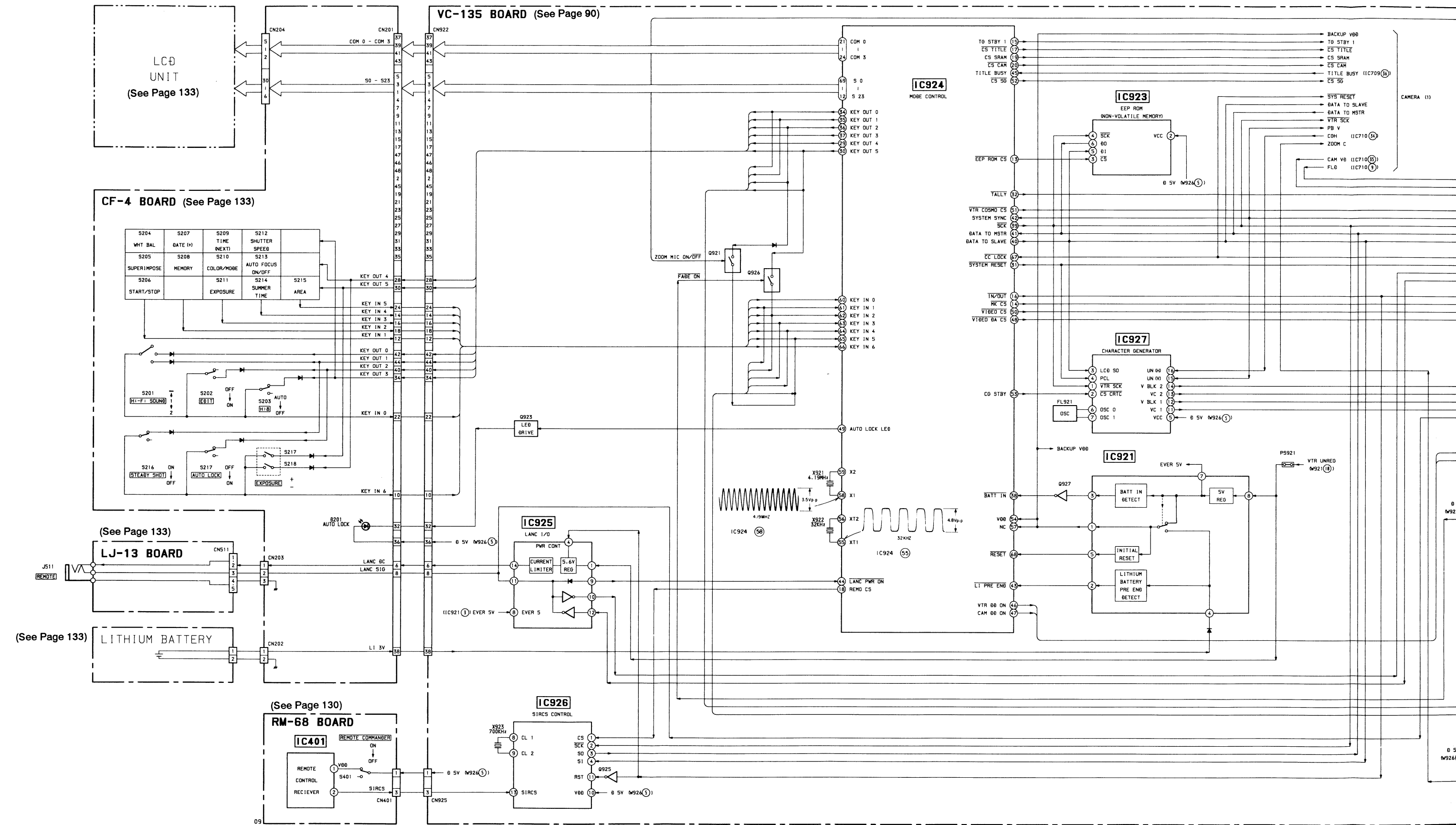


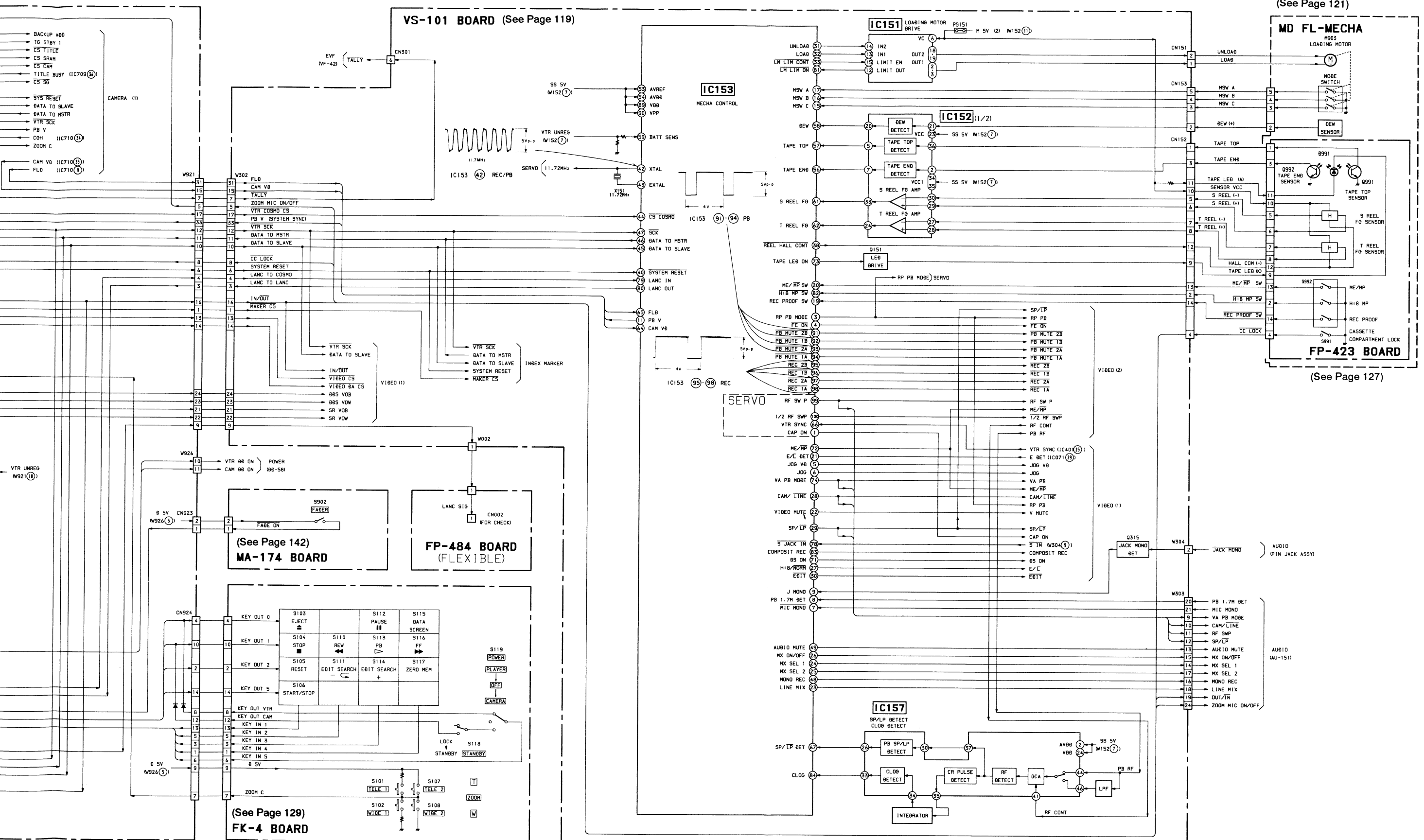
3-8. SERVO BLOCK DIAGRAM



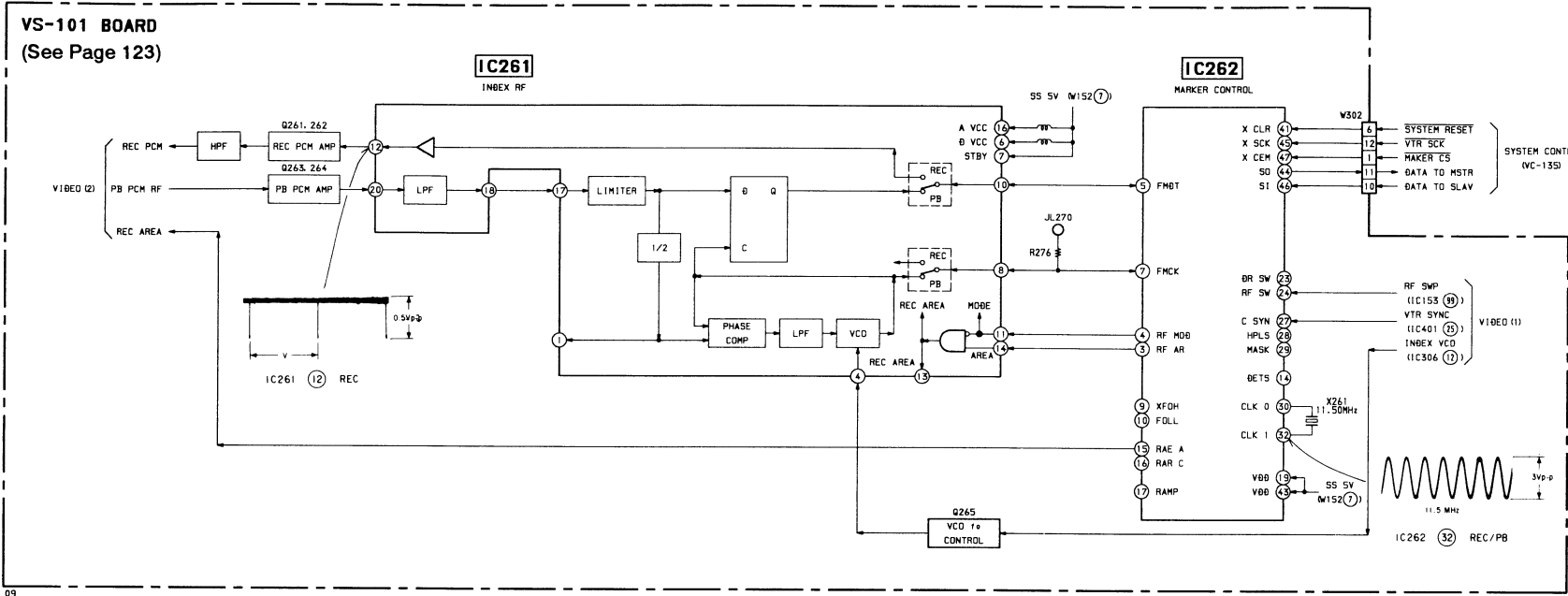


3-9. SYSTEM CONTROL BLOCK DIAGRAM

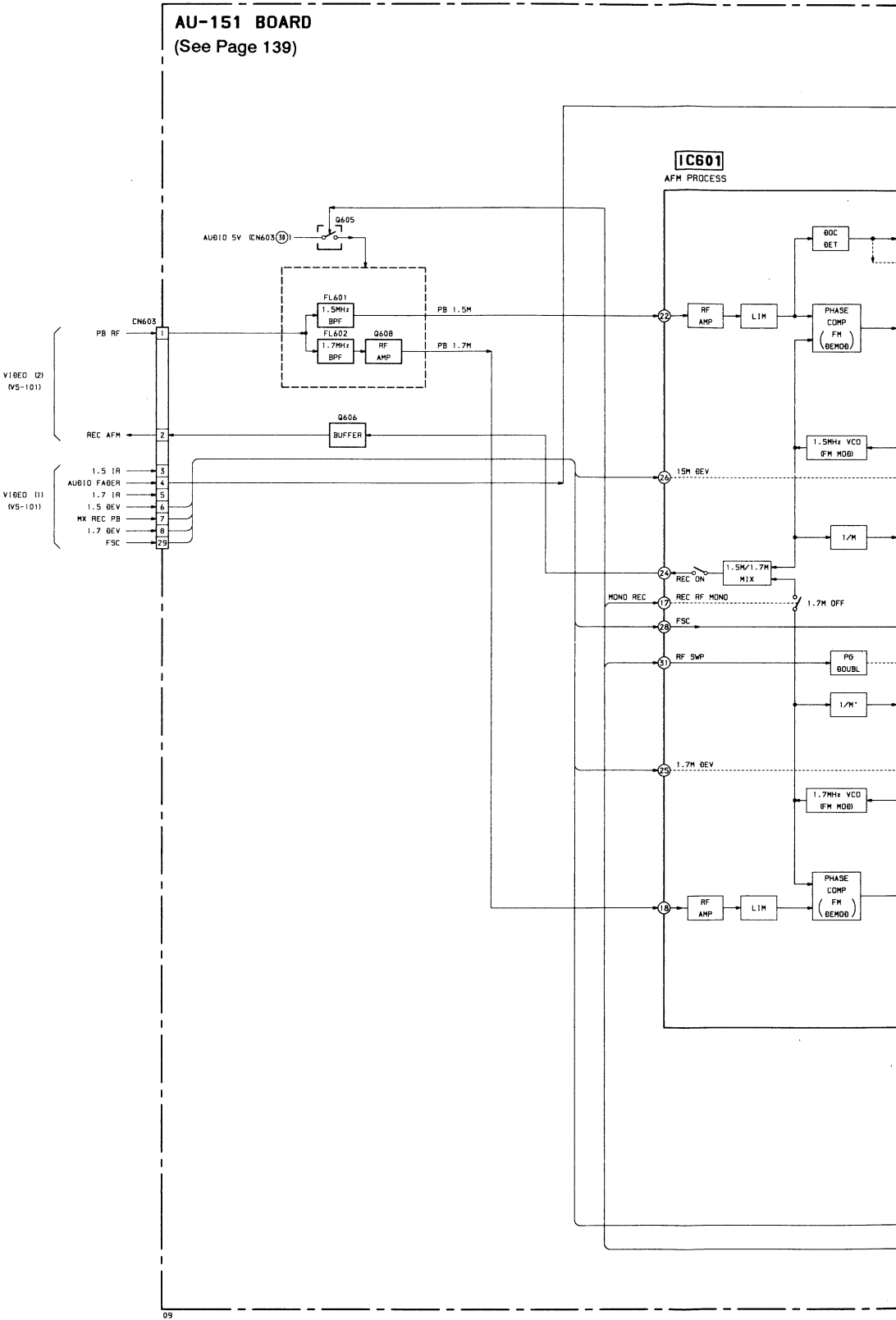


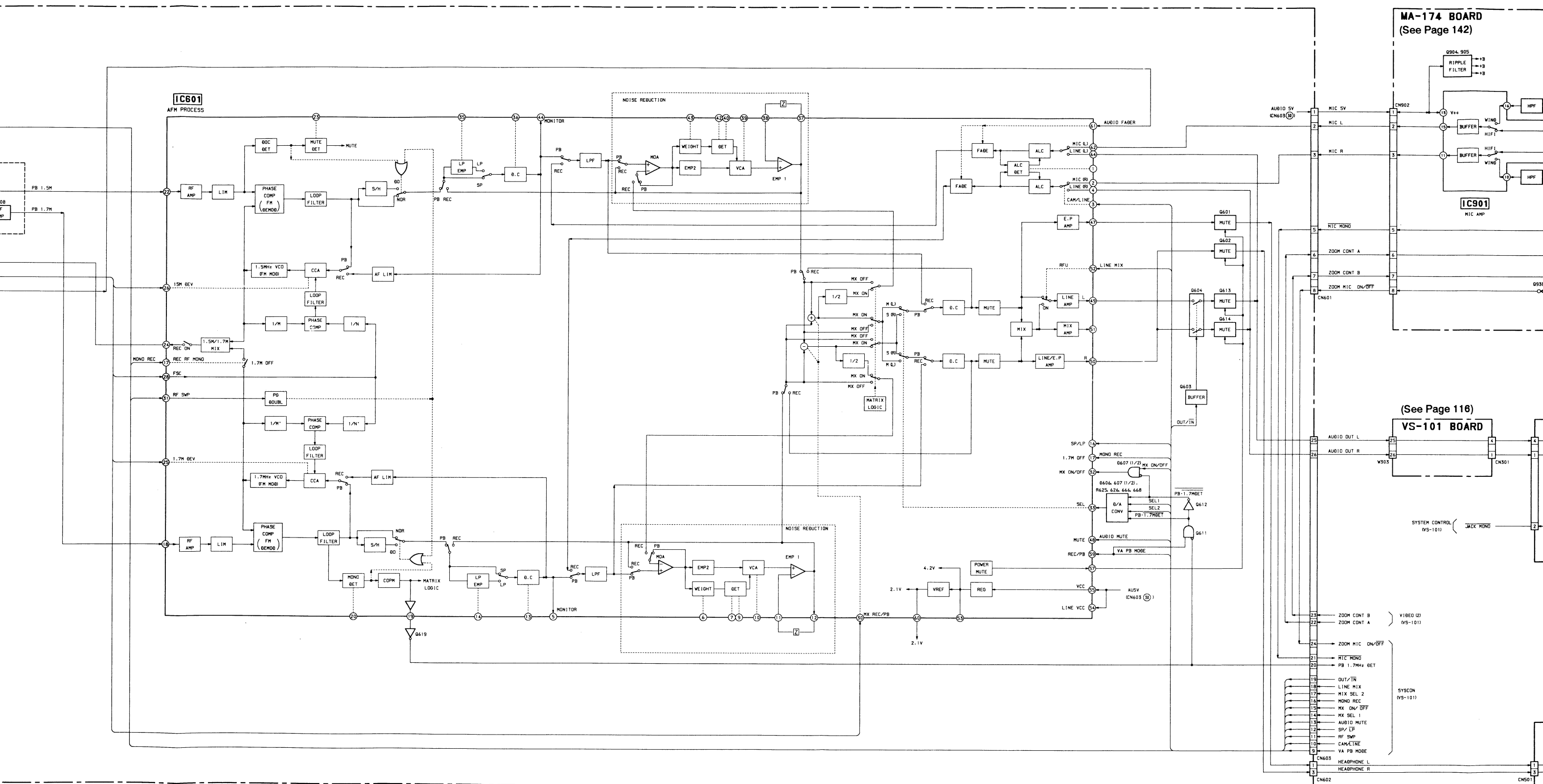


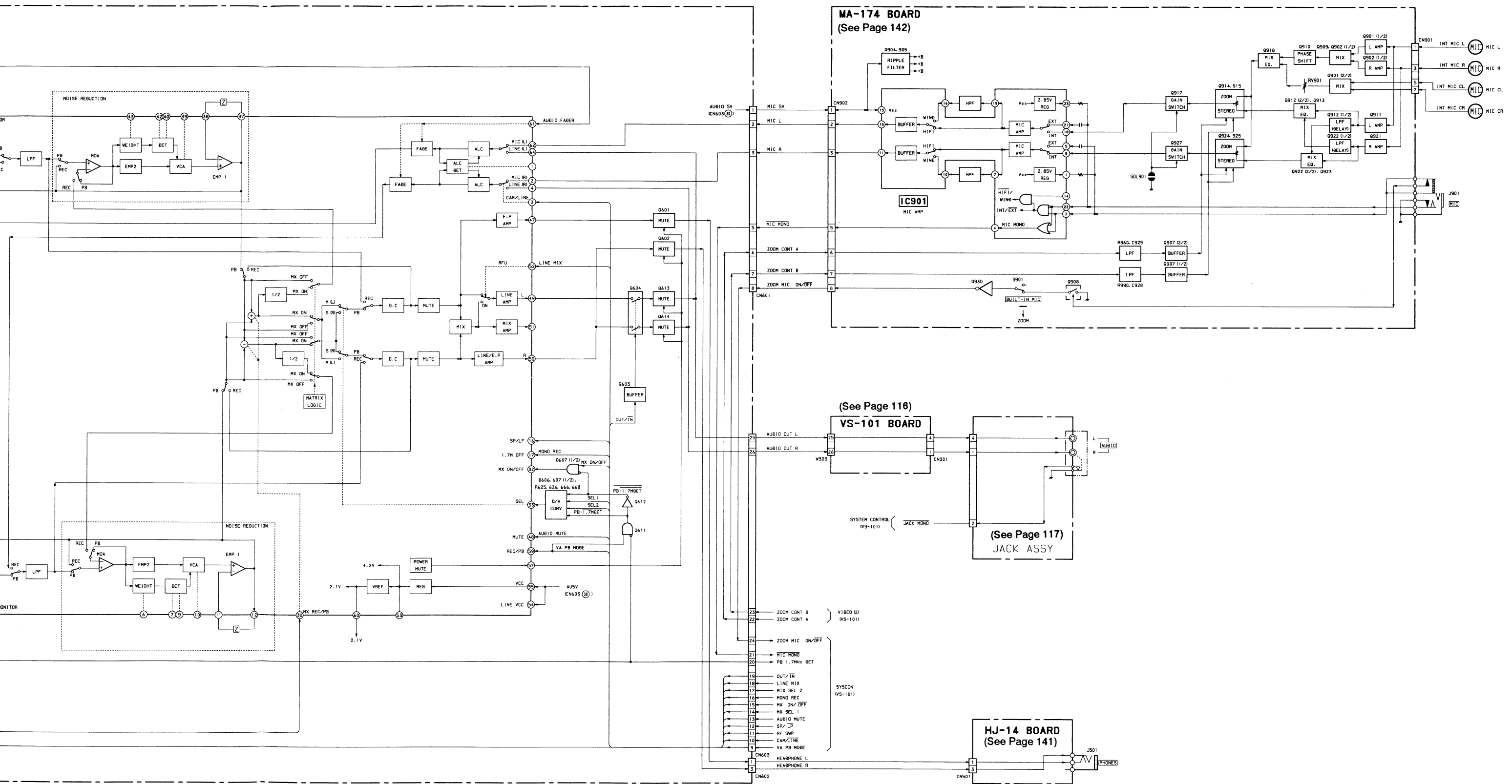
3-10. INDEX MARKER BLOCK DIAGRAM



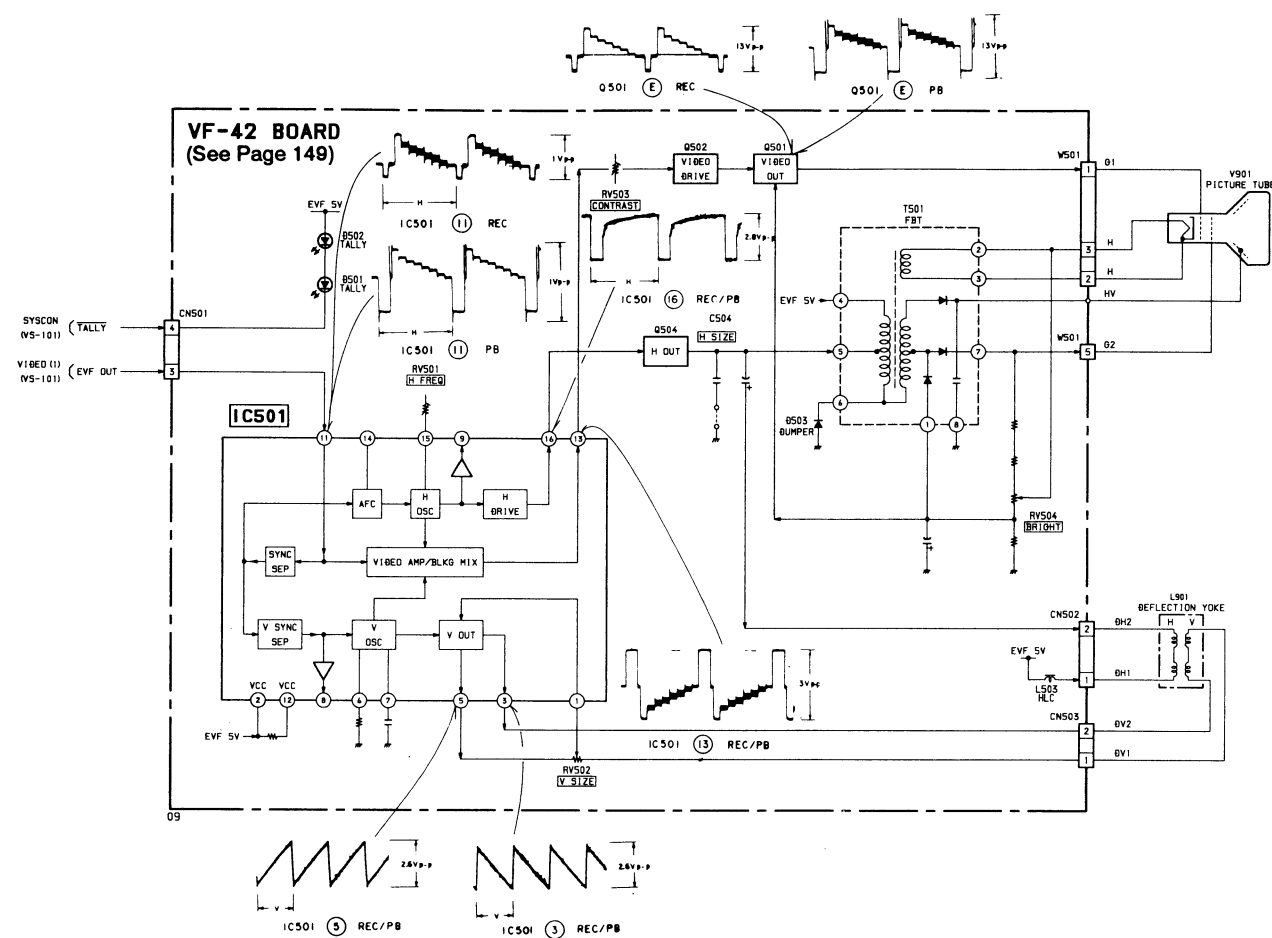
3-11. AUDIO BLOCK DIAGRAM



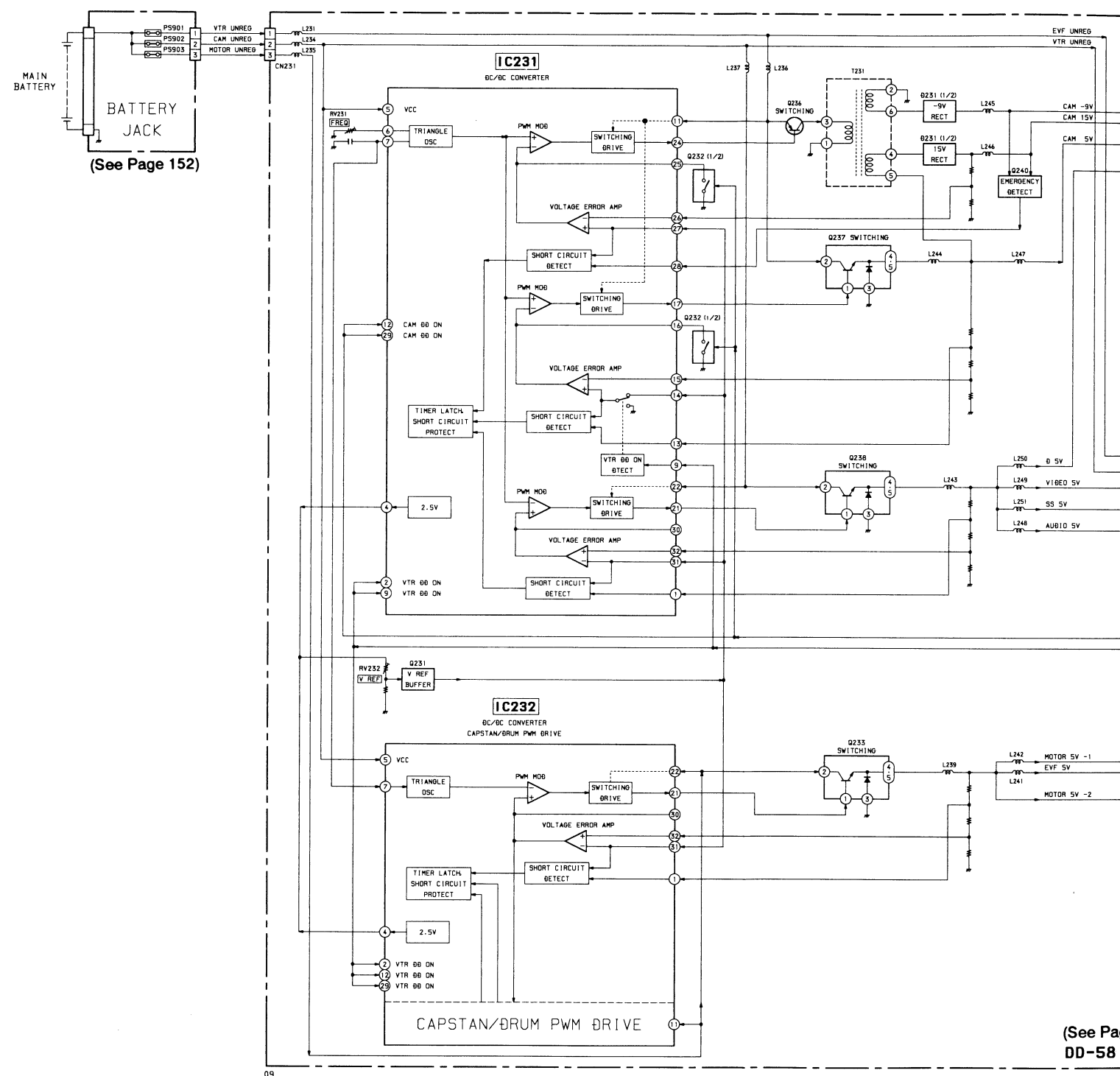


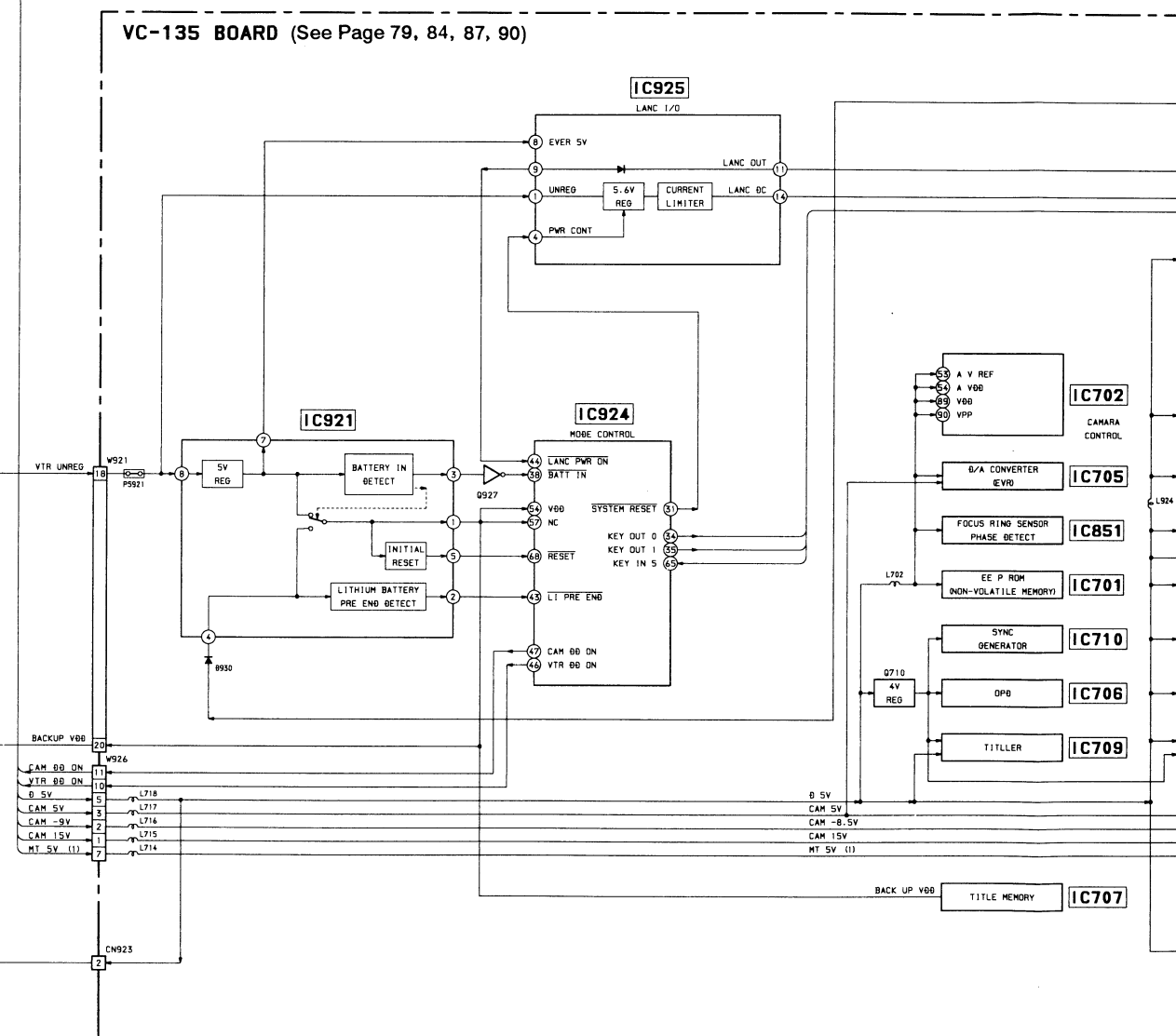
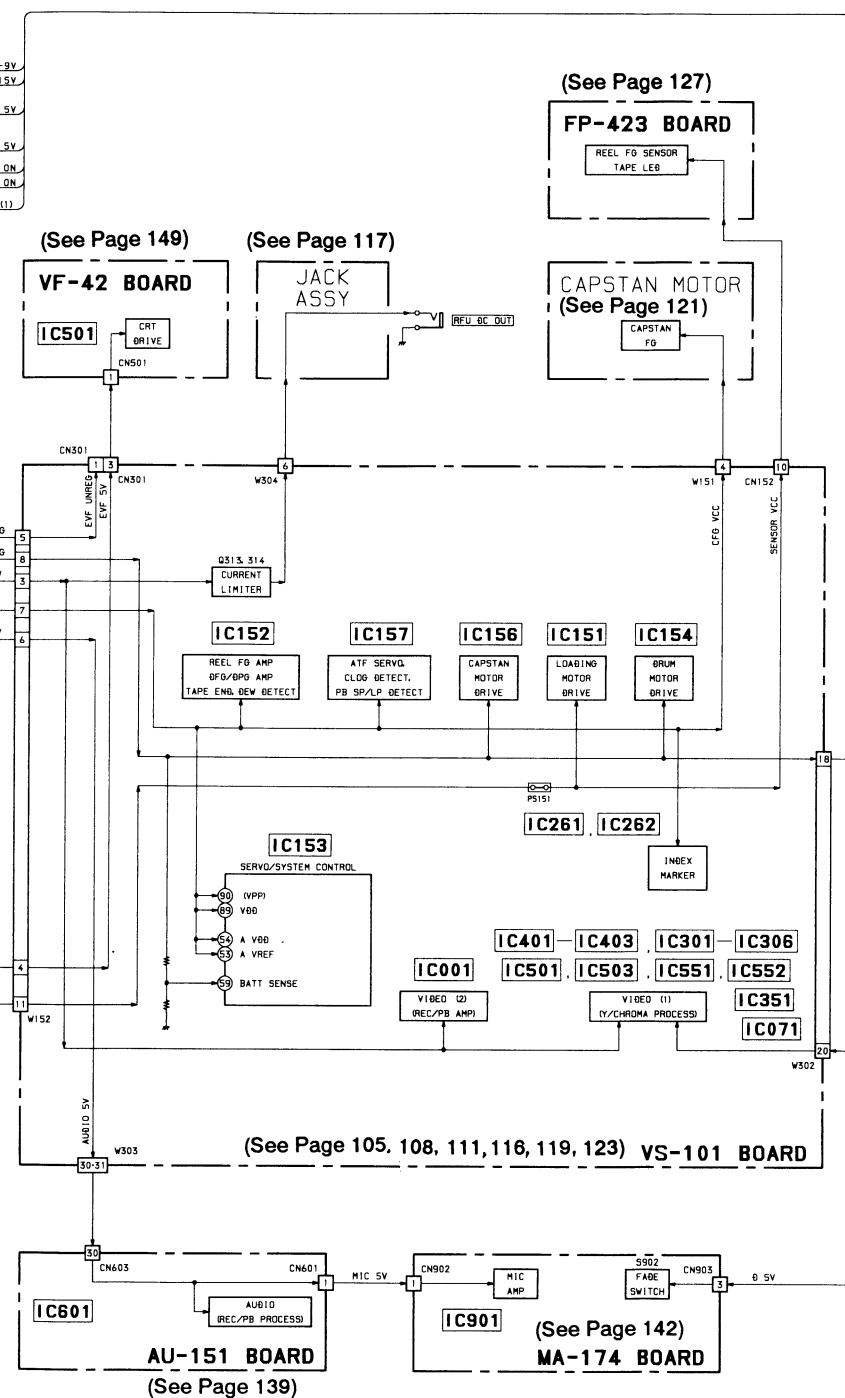
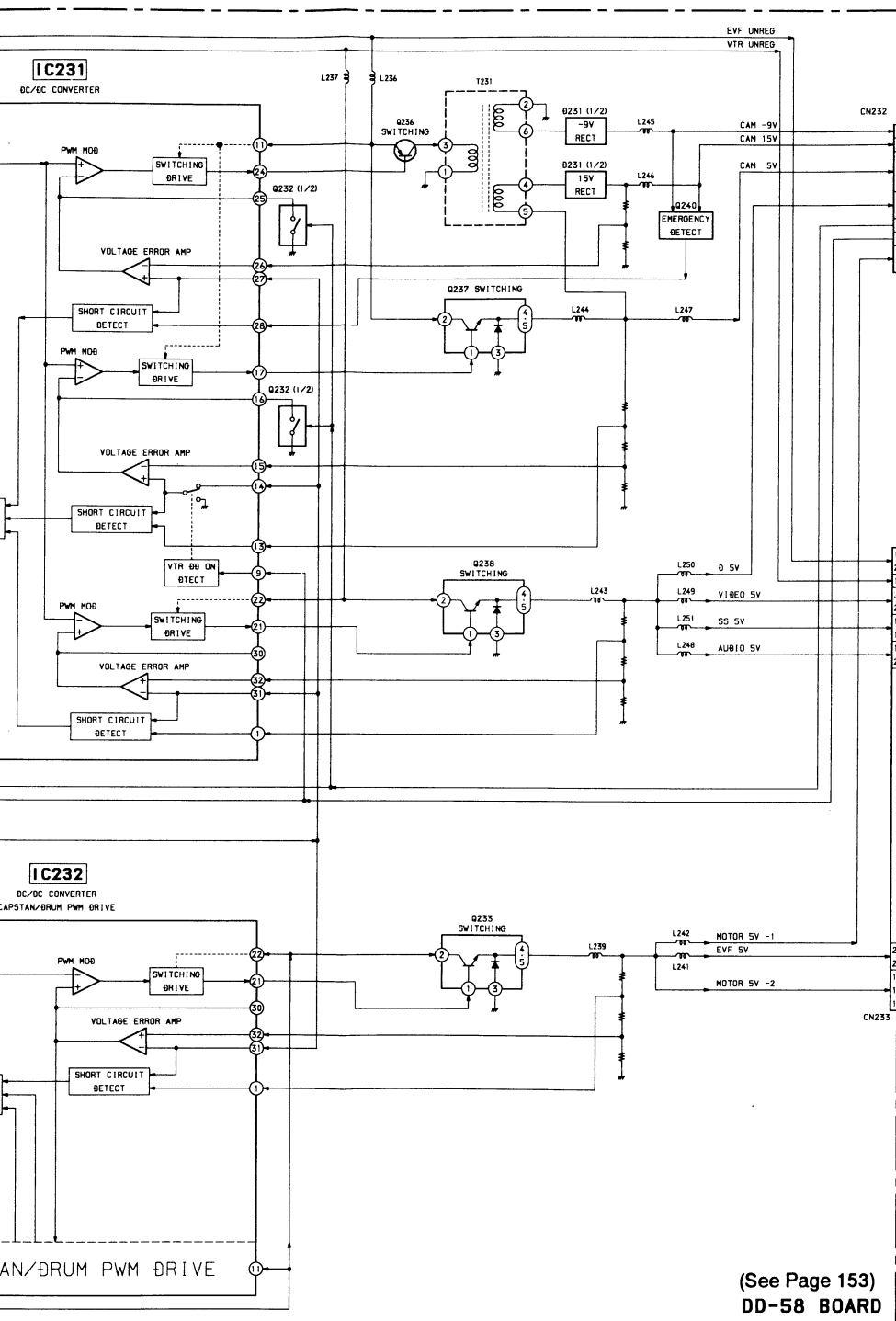


3-12. EVF BLOCK DIAGRAM



3-13. POWER BLOCK DIAGRAM

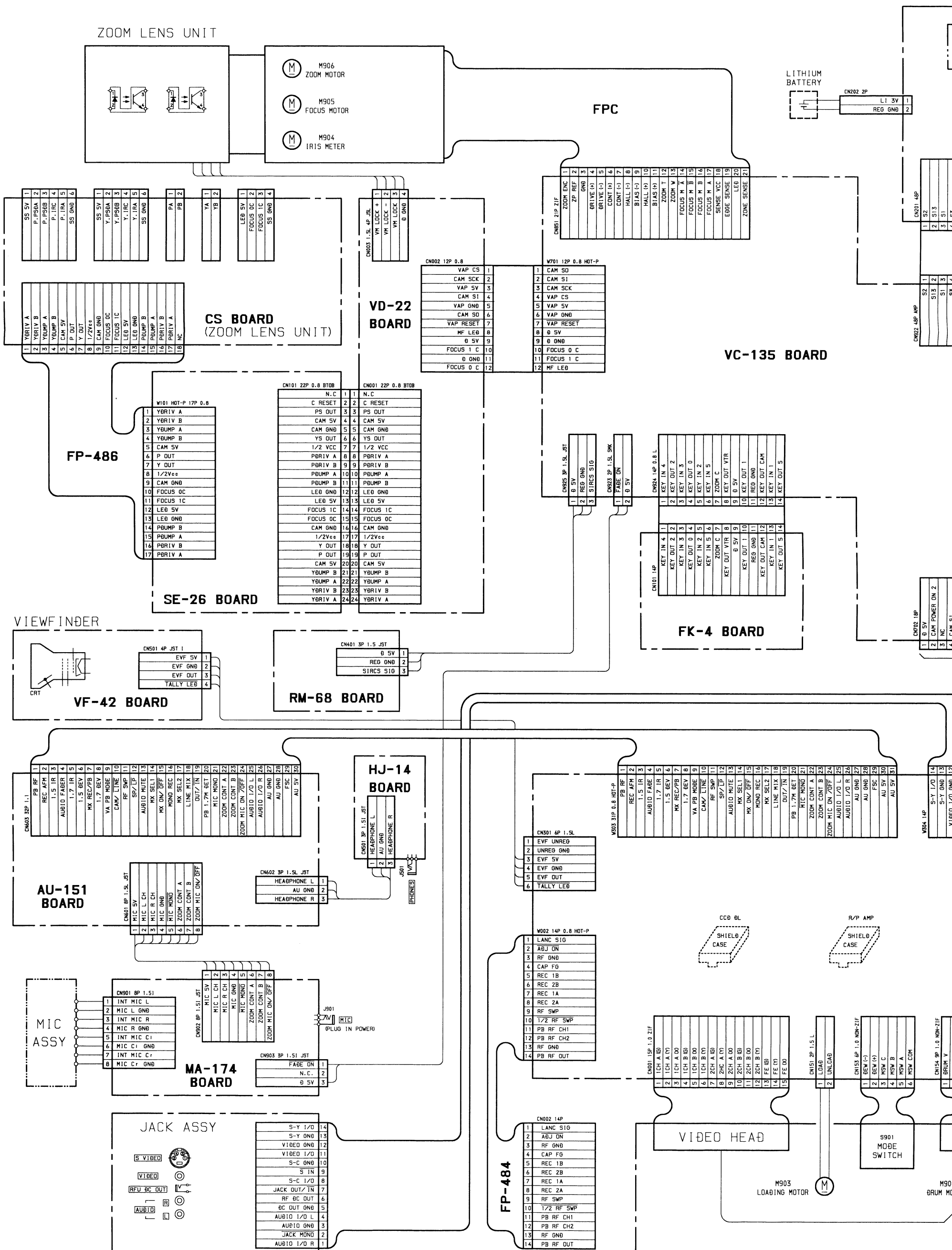


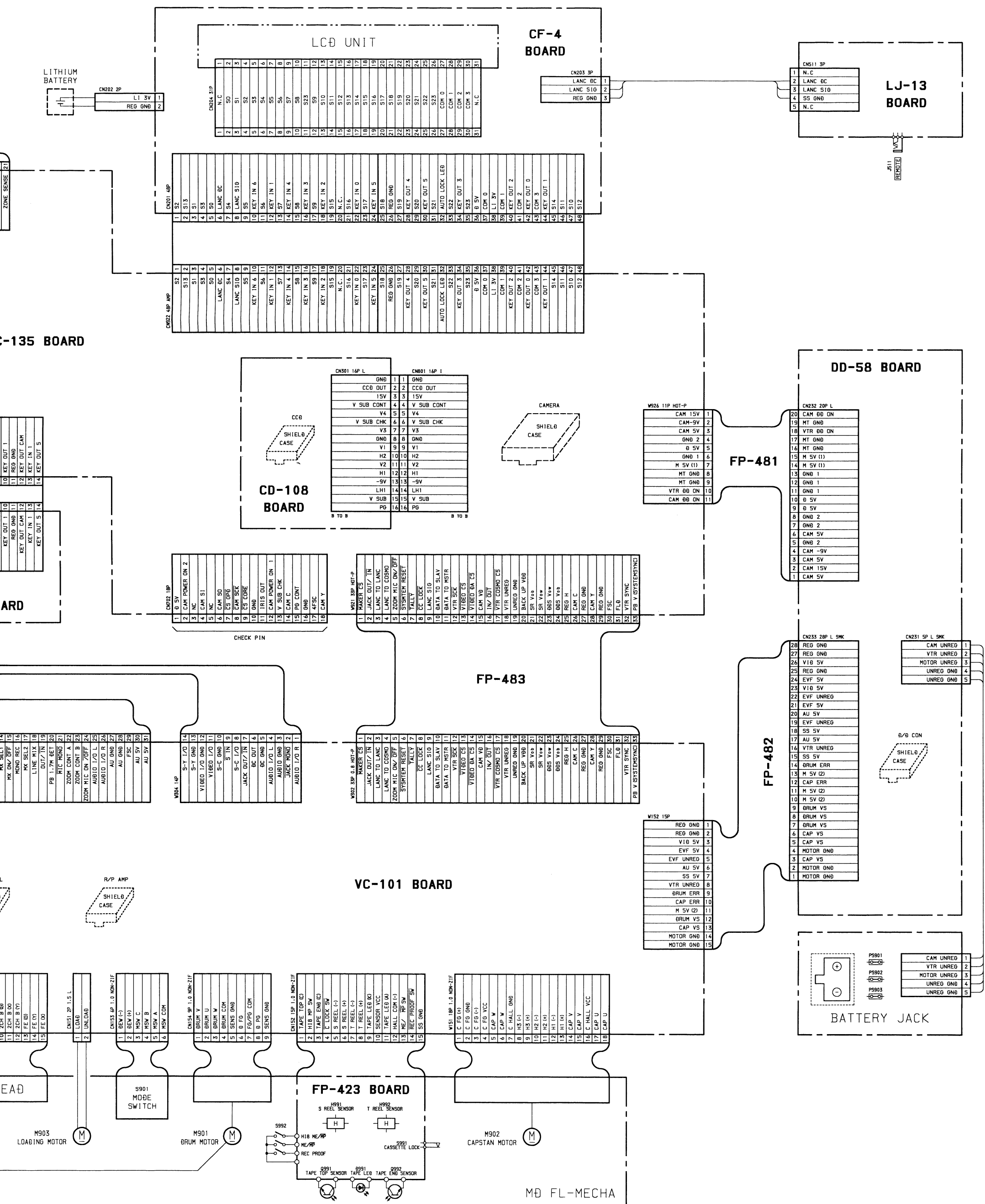


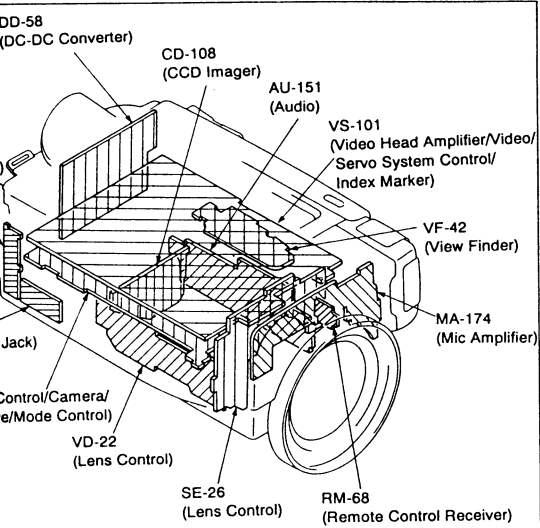
SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

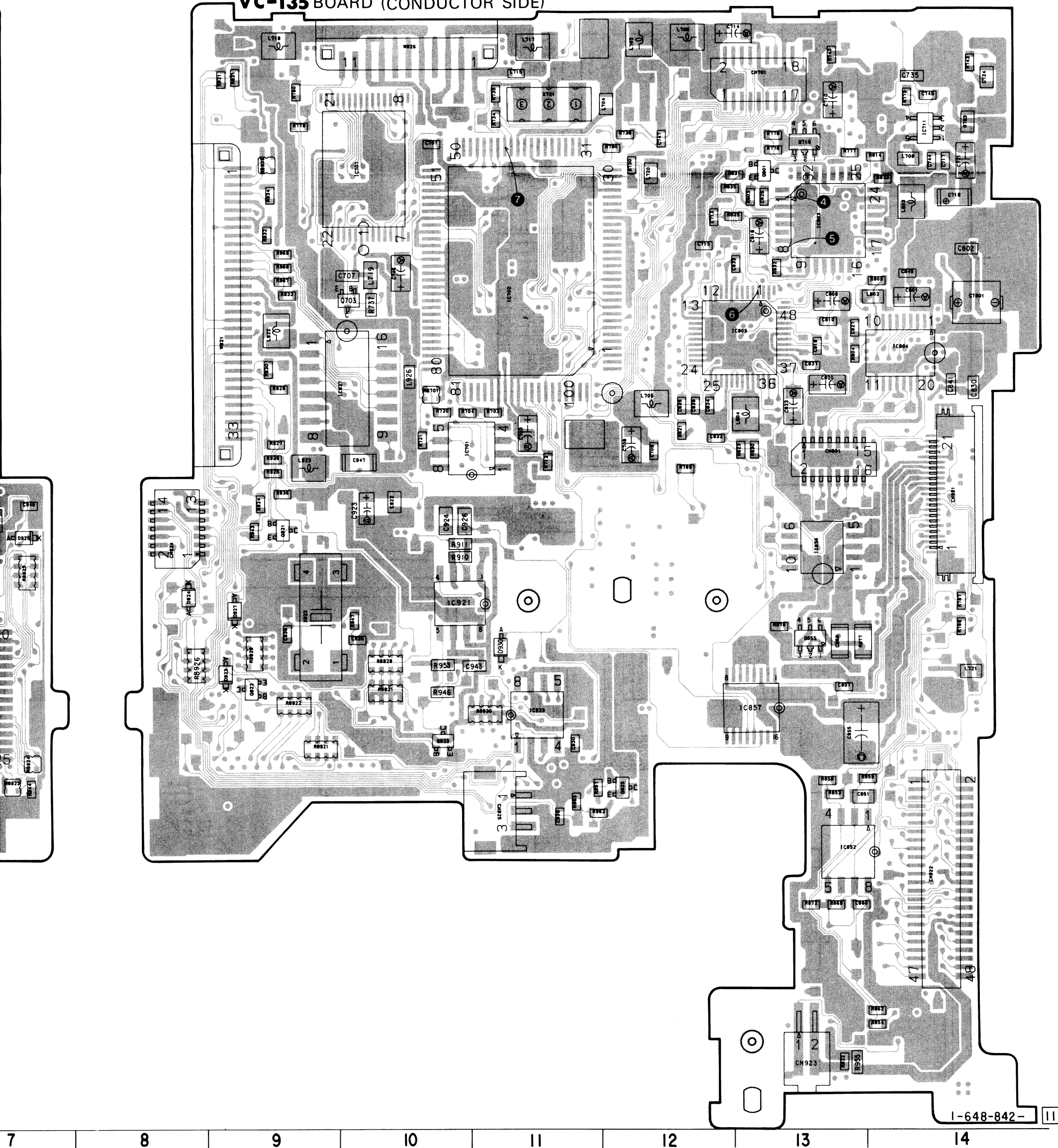
4-1. FRAME SCHEMATIC DIAGRAM







VC-135 BOARD (CONDUCTOR SIDE)



I-648-842-11

A
—
B
—
C
—
D
—
E
—
F
—
G
—
H
—
I
—
J
—
K
—
L
—
M
—
N
—
O

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			
PB			

1

5Vp-p

1.5 μ sec

IC801 (5)

2

5.5Vp-p

0.1 μ sec

IC801 (37)

3

5.6Vp-p

14.1875MHz

IC801 (57)

4

0.4Vp-p

H

IC803 (2)

5

1Vp-p

H

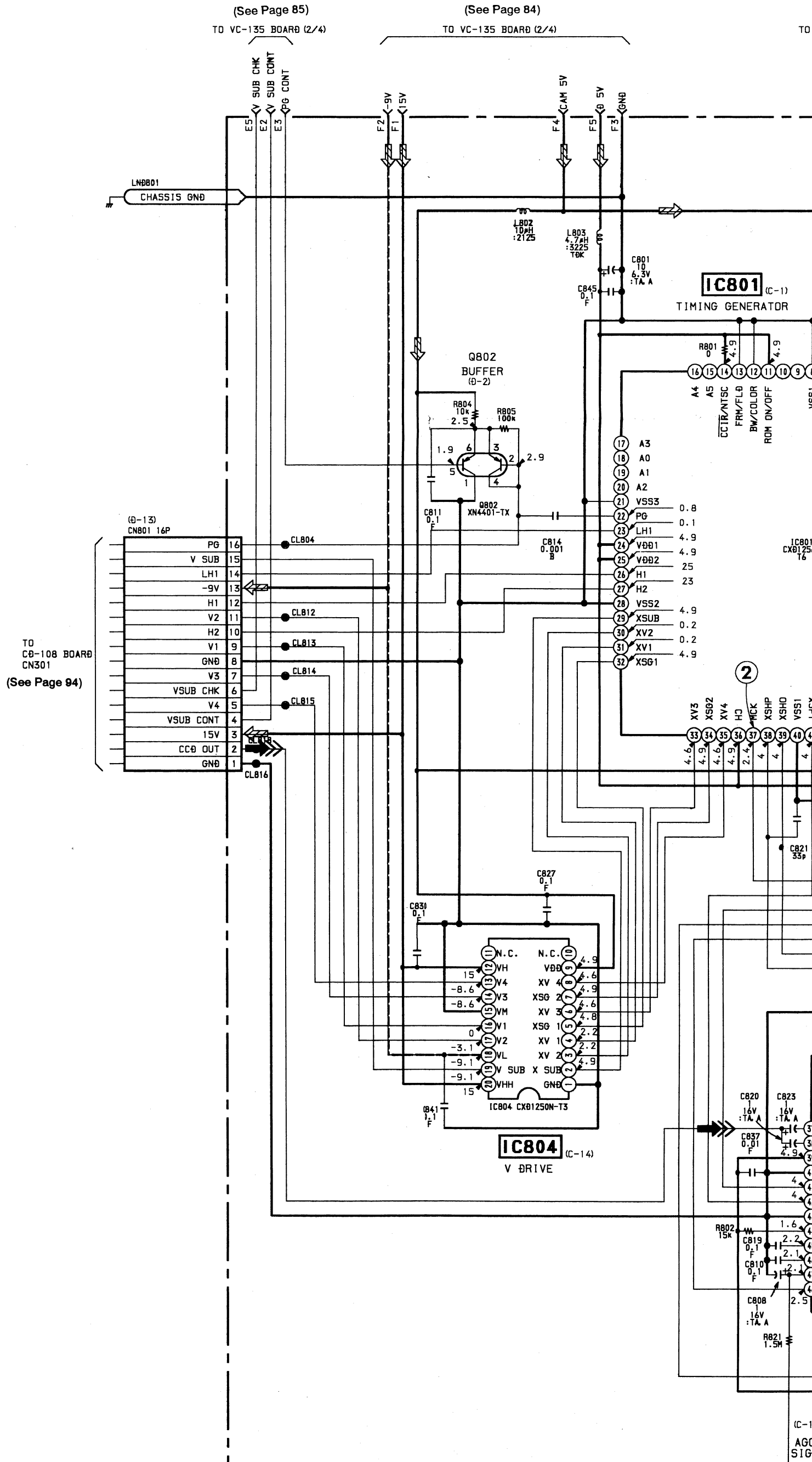
IC803 (8)

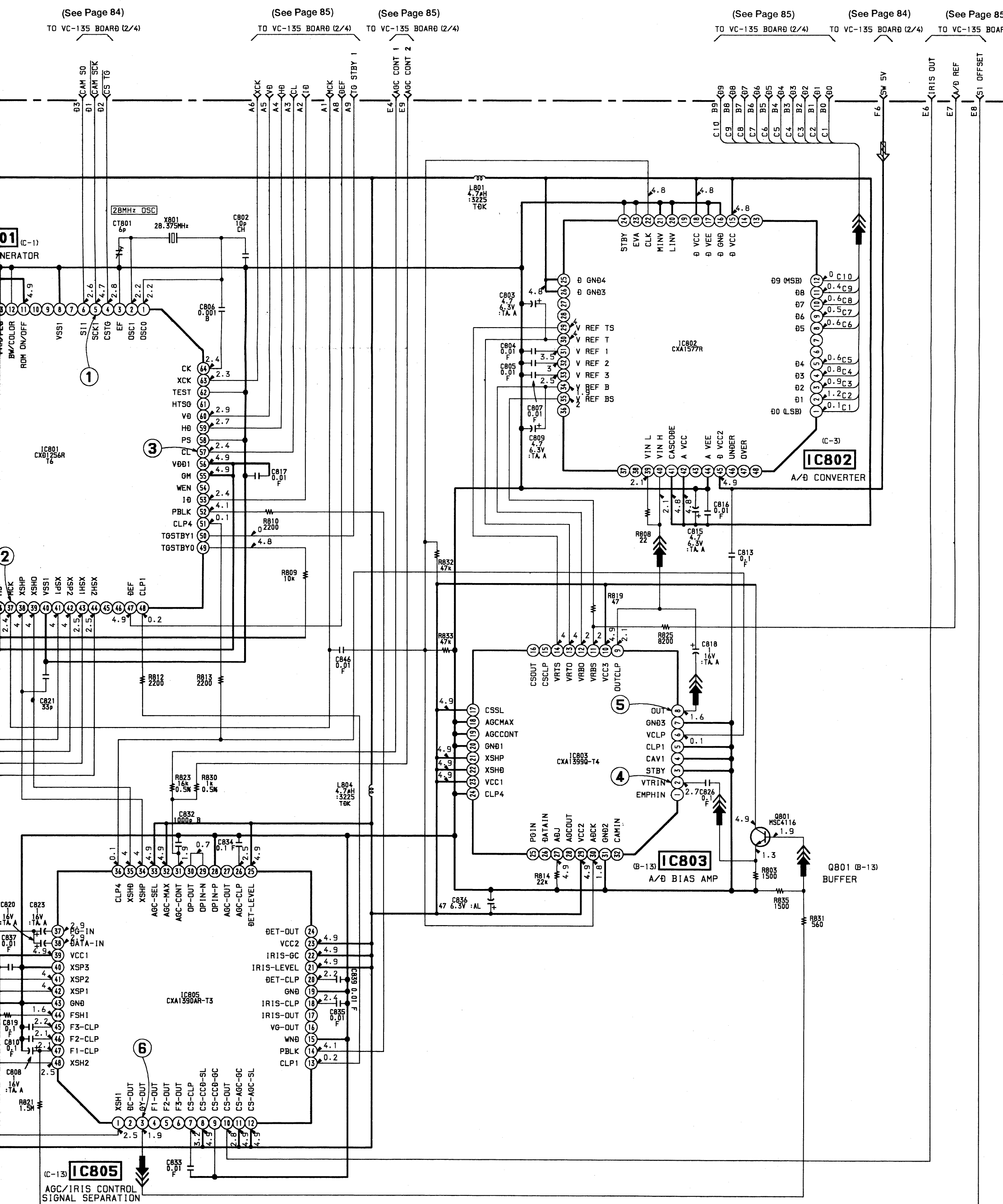
6

0.4Vp-p

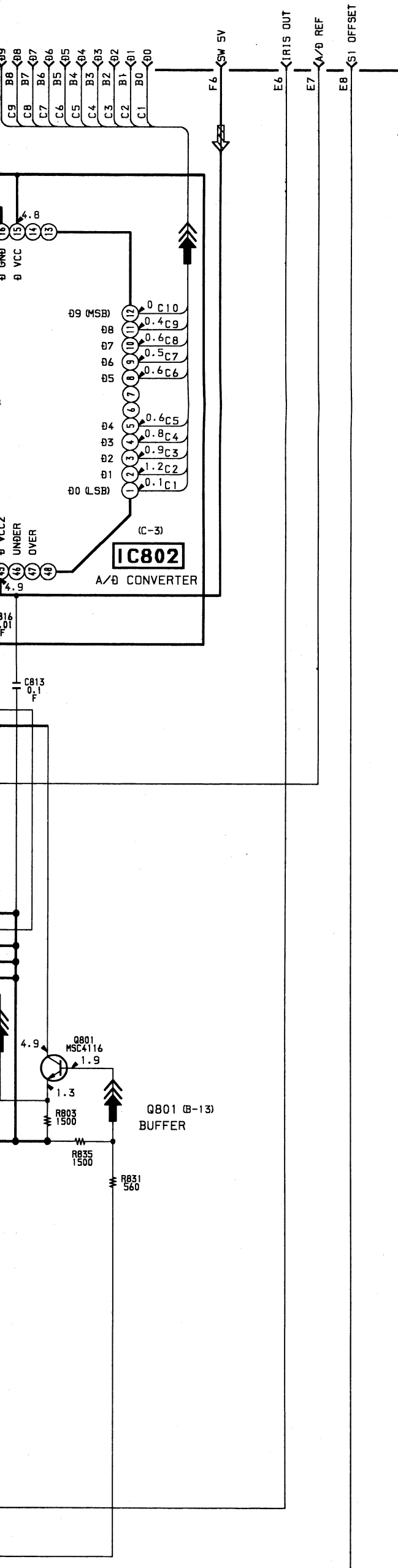
H

IC805 (3)





(See Page 85) (See Page 84) (See Page 85)
 TO VC-135 BOARD (2/4) TO VC-135 BOARD (2/4) TO VC-135 BOARD (2/4)



THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
 (In addition to this, the necessary note is printed in each block.)

- For printed wiring boards.
- : Pattern from the side which enables seeing.
 (The other layers' patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- Through hole is omitted.

Caution:

Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.
 Parts face side: Parts on the parts face side seen from the parts face are indicated.

- For schematic diagrams.
- Caution when replacing chip parts.
 New parts must be attached after removal of chip.
 Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms.
 Chip resistor are 1/10W unless otherwise noted.
 k Ω : 1000 Ω , M Ω : 1000k Ω .
- All capacitors are in μ F unless otherwise noted. pF: μ μ F.
 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- : internal component.
- : adjustment for repair.
- : B+ Line.
- : B- Line.
- : IN/OUT direction of (+, -) B LINE.
- Circled numbers refer to waveforms.

Note:

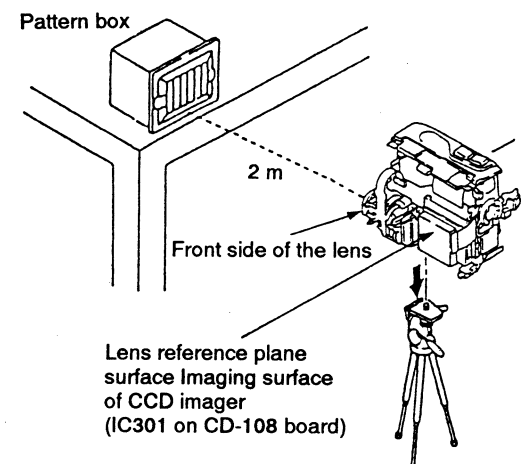
The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

• Measuring conditions voltage value and waveform.
 (CAMERA REC mode)

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points.
 Readings are taken with a digital multimeter (DC 10M Ω).
- Voltage variations may be noted due to normal production tolerances.

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

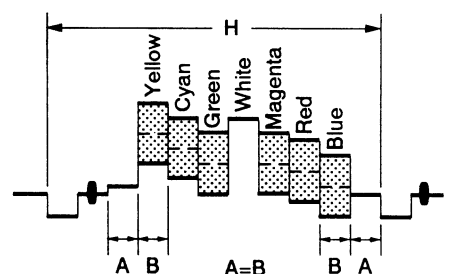


Fig. a (Video output terminal output waveform)

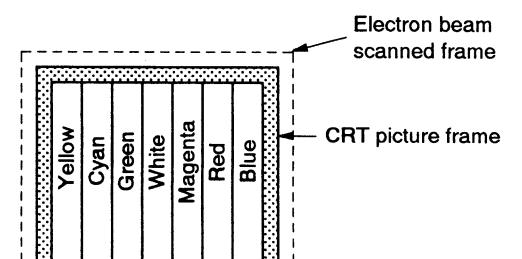


Fig. b (Picture on monitor TV)

(VTR REC, VTR PB MODE)

- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10M Ω).
- Voltage variations may be noted due to normal production tolerances.

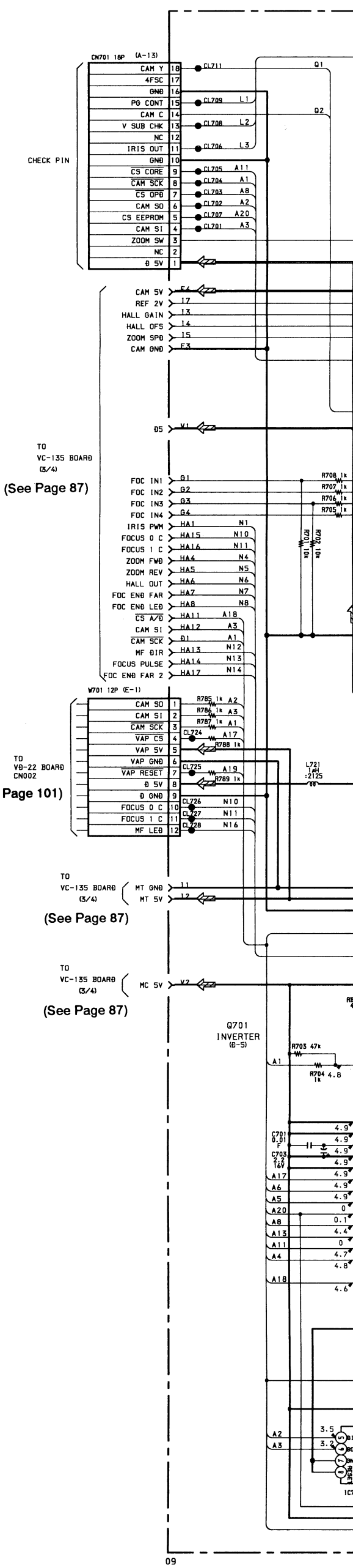
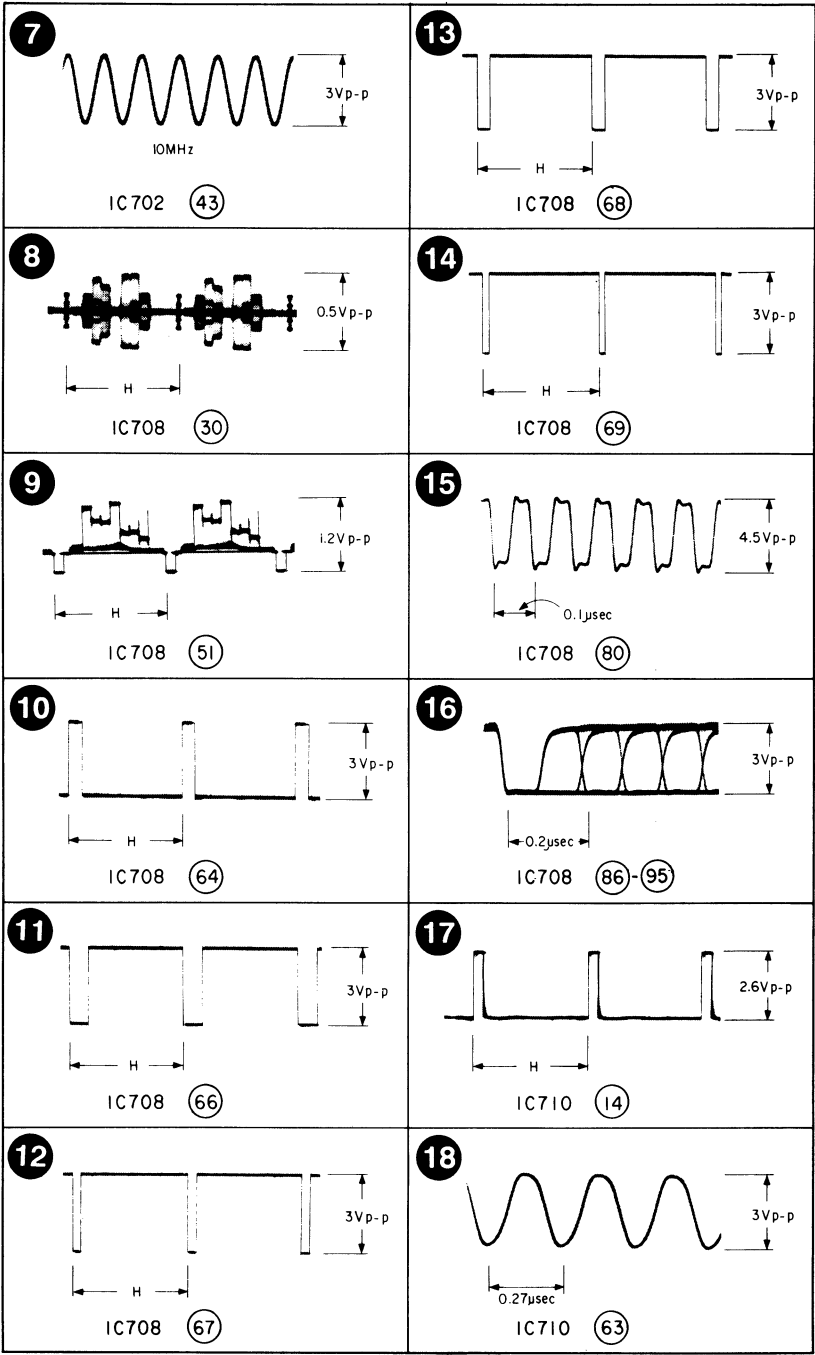
Note: Refer to "10-1-5. How to set the REC mode in the model with out REC switch." in VIDEO SECTION ADJUSTMENTS.

— Ref. No. VC-135 BOARD: 2000 series —

• SIGNAL PATH

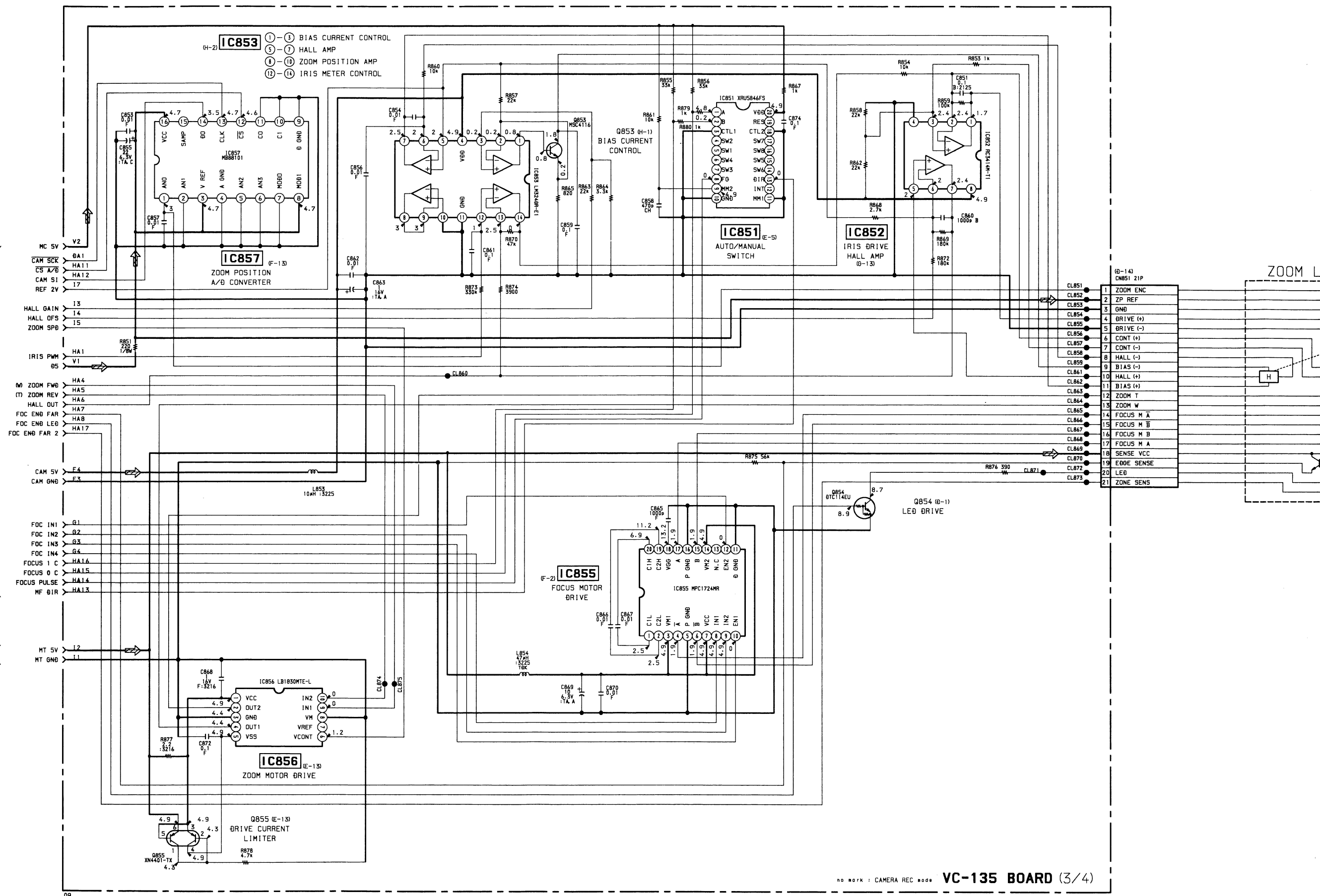
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡➡	➡➡➡
PB			

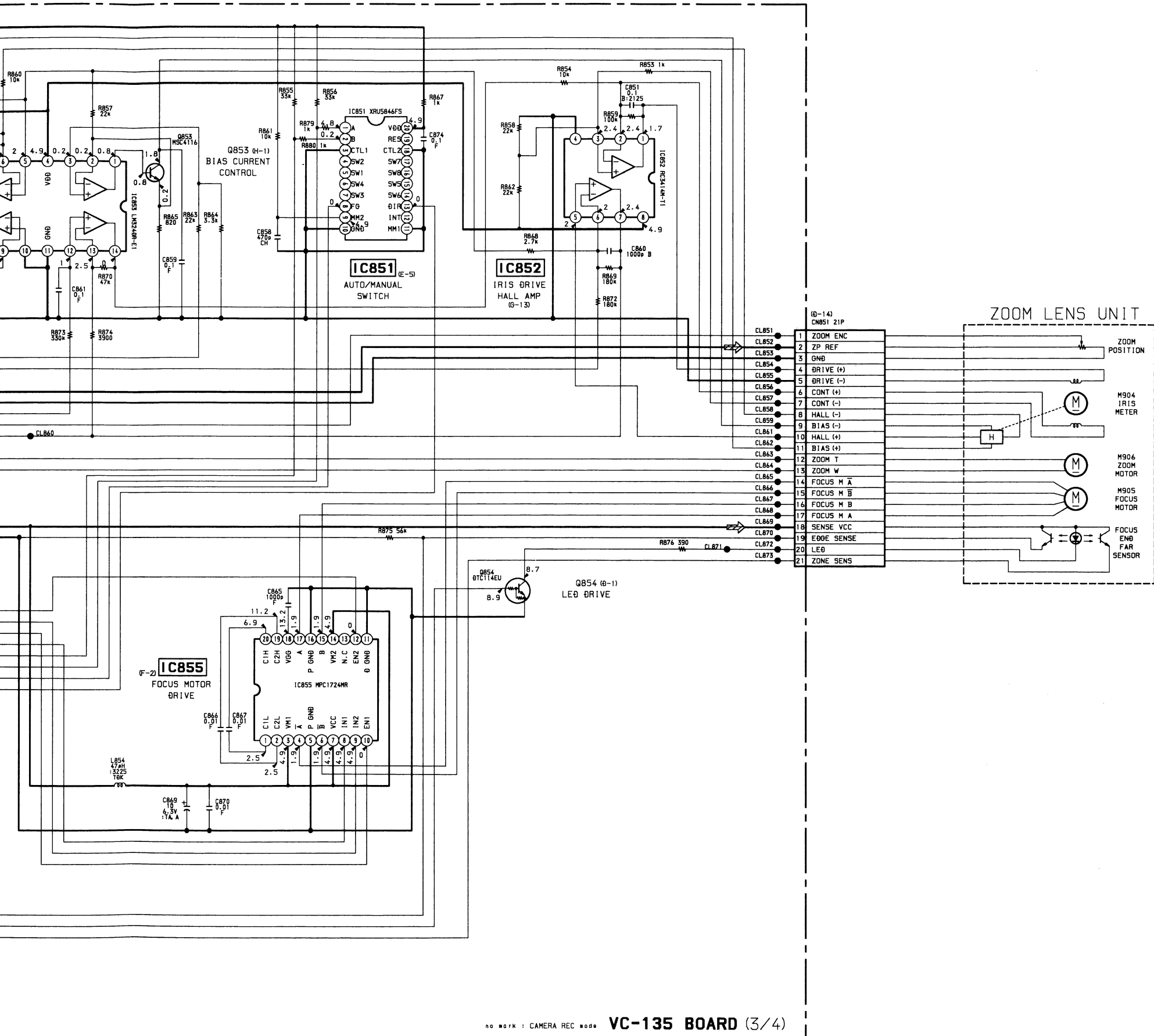
VC-135 BOARD (2/4)







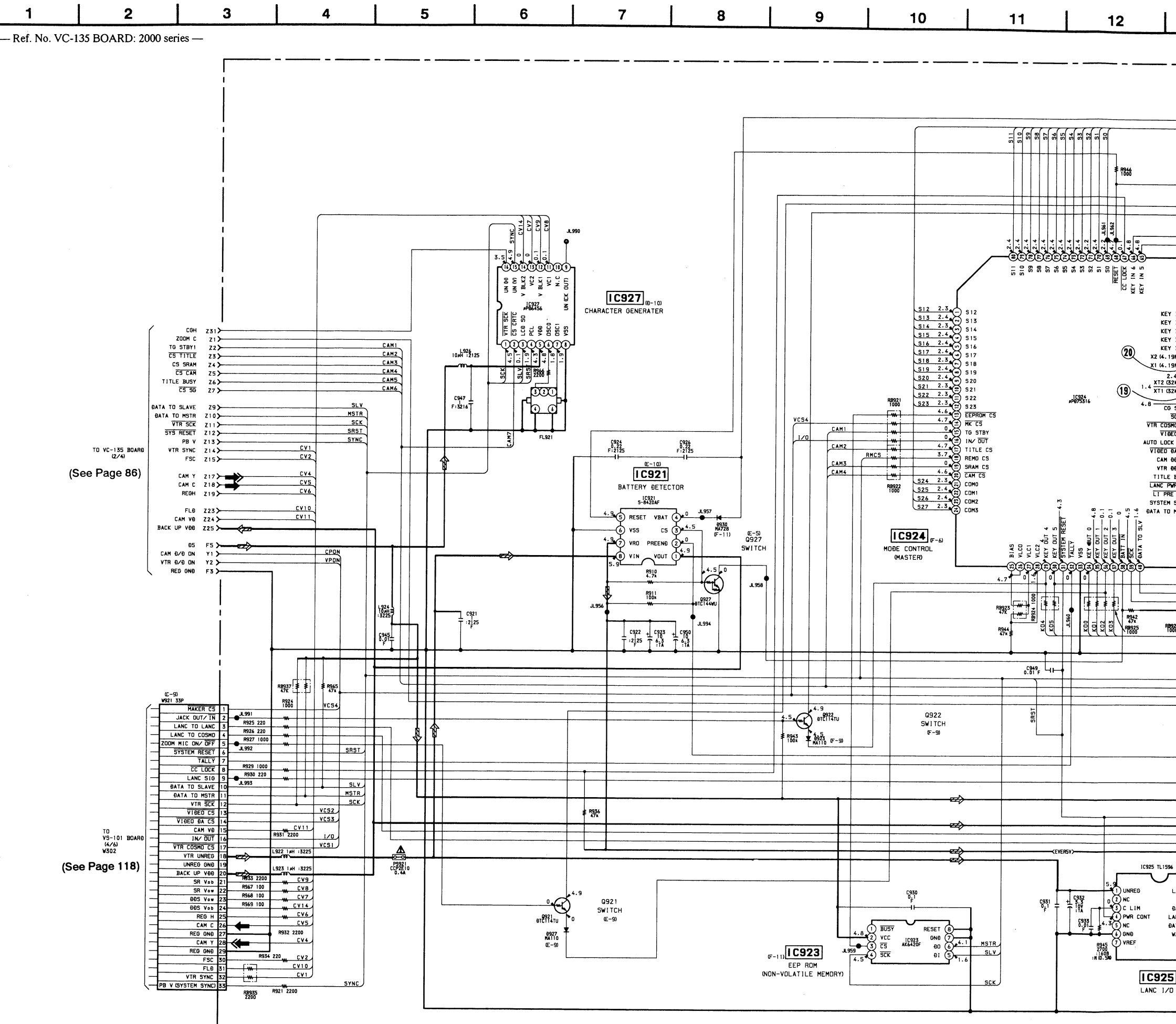




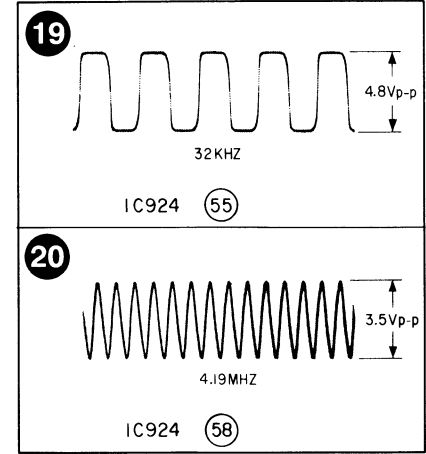
no work : CAMERA REC 000 VC-135 BOARD (3/4)

— Ref. No. VC-135 BOARD: 2000 series —

A
B
C
D
E
F
G
H
I
J



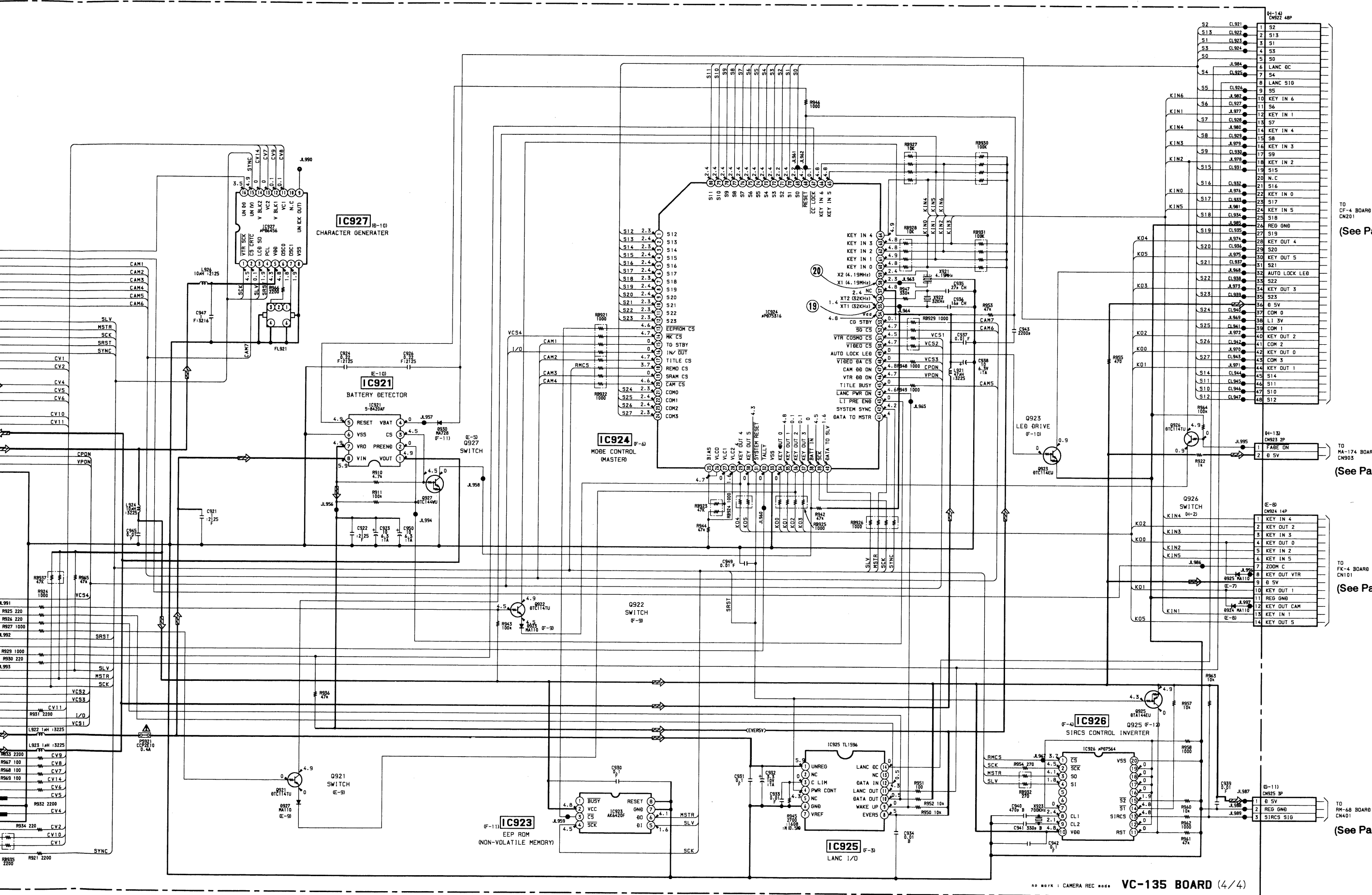
VC-135 BOARD (4/4)



• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡➡	
PB			

Note:
The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.



TO
CF-4 BOARD
CN201

(See Page 133)

TO
HA-174 BOARD
CN903

(See Page 144)

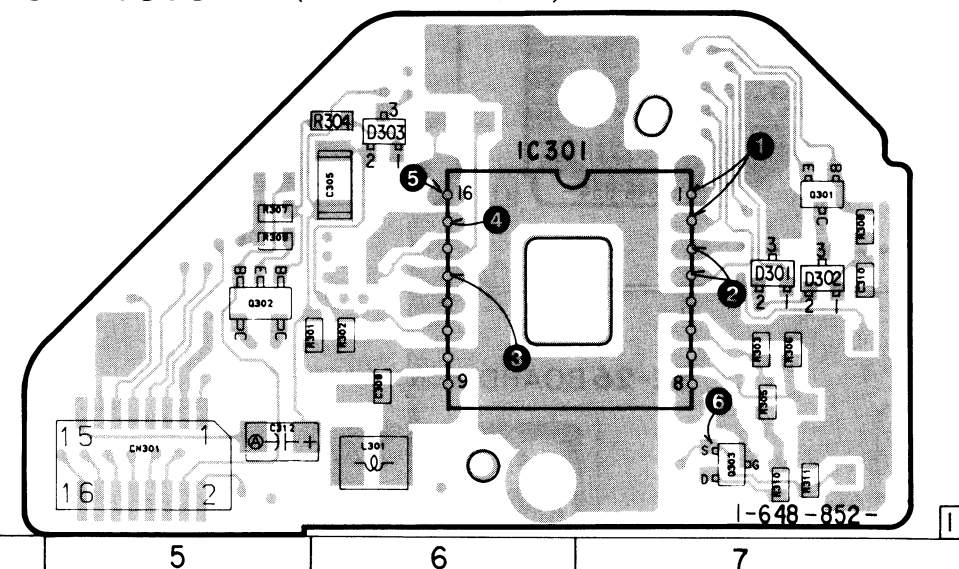
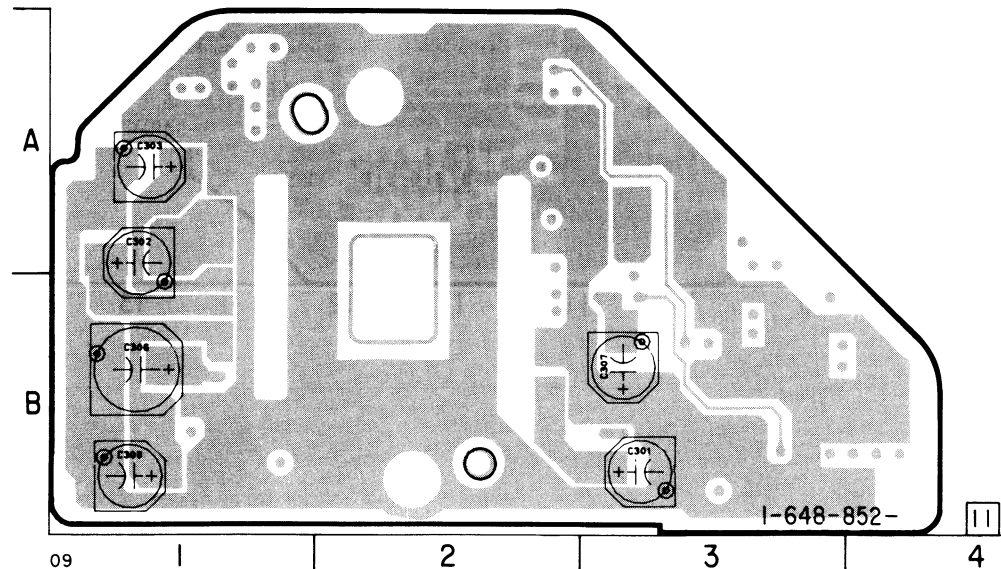
TO
FK-4 BOARD
CN101

(See Page 129)

TO
RM-68 BOARD
CN401

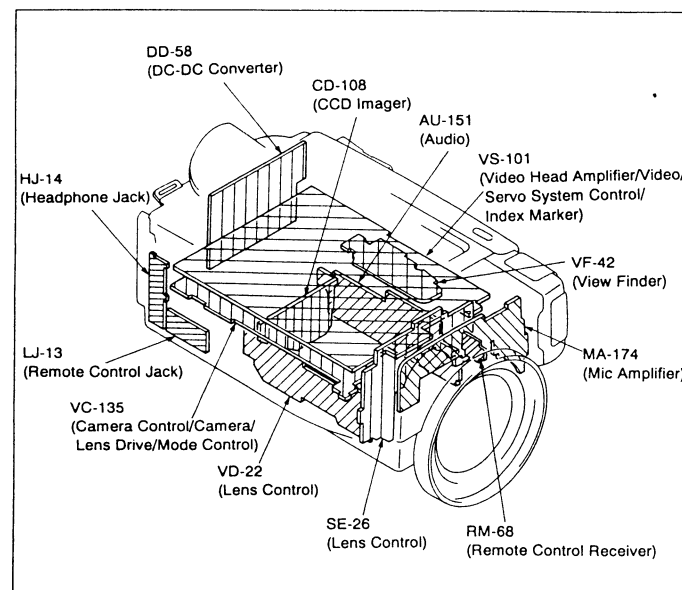
(See Page 130)

— Ref. No. CD-108 BOARD: 1000 series —



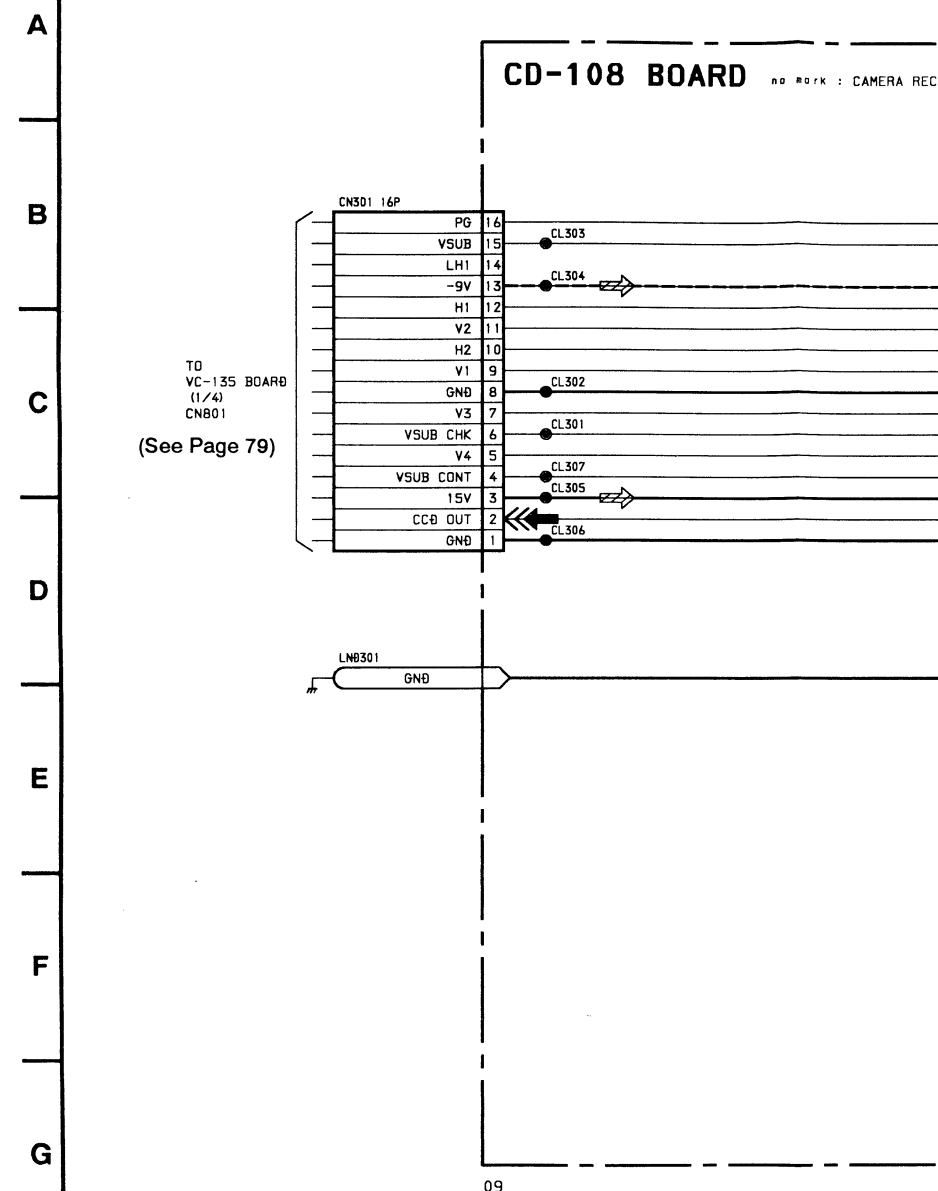
- **For printed wiring boards.**
- CD-108 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.



1	2	3	4	5
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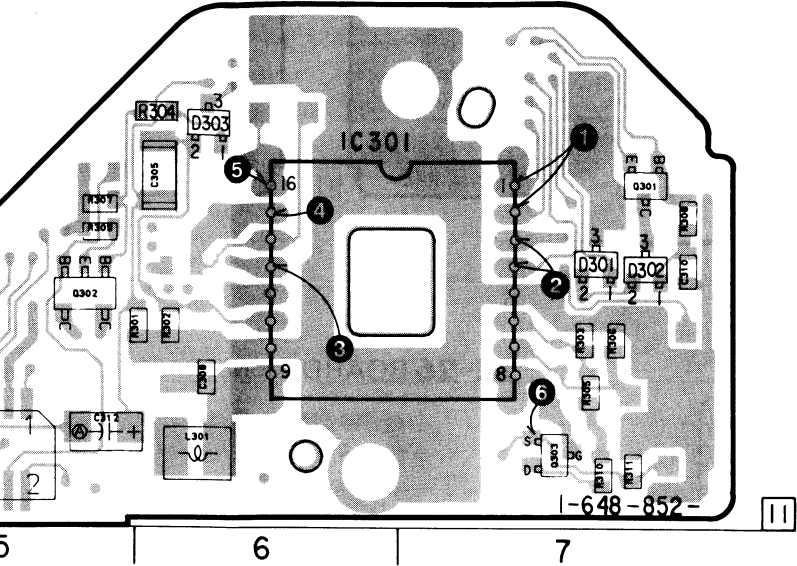
— Ref. No. CD-108 BOARD: 1000 series —



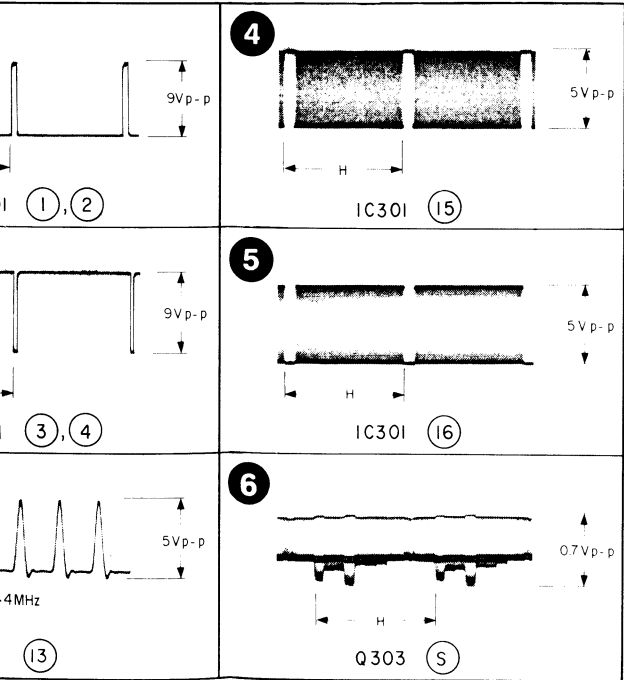
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡➡➡
PB			

- Some cameras use image sensors that are not connected to the camera's main processor. The camera's main processor can also write data to the image sensor (upper) and read data from the image sensor (lower). The camera's main processor can also supply data to the image sensor (lower) and read data from the image sensor (upper) for input to the camera's main processor.

BOARD (CONDUCTOR SIDE)

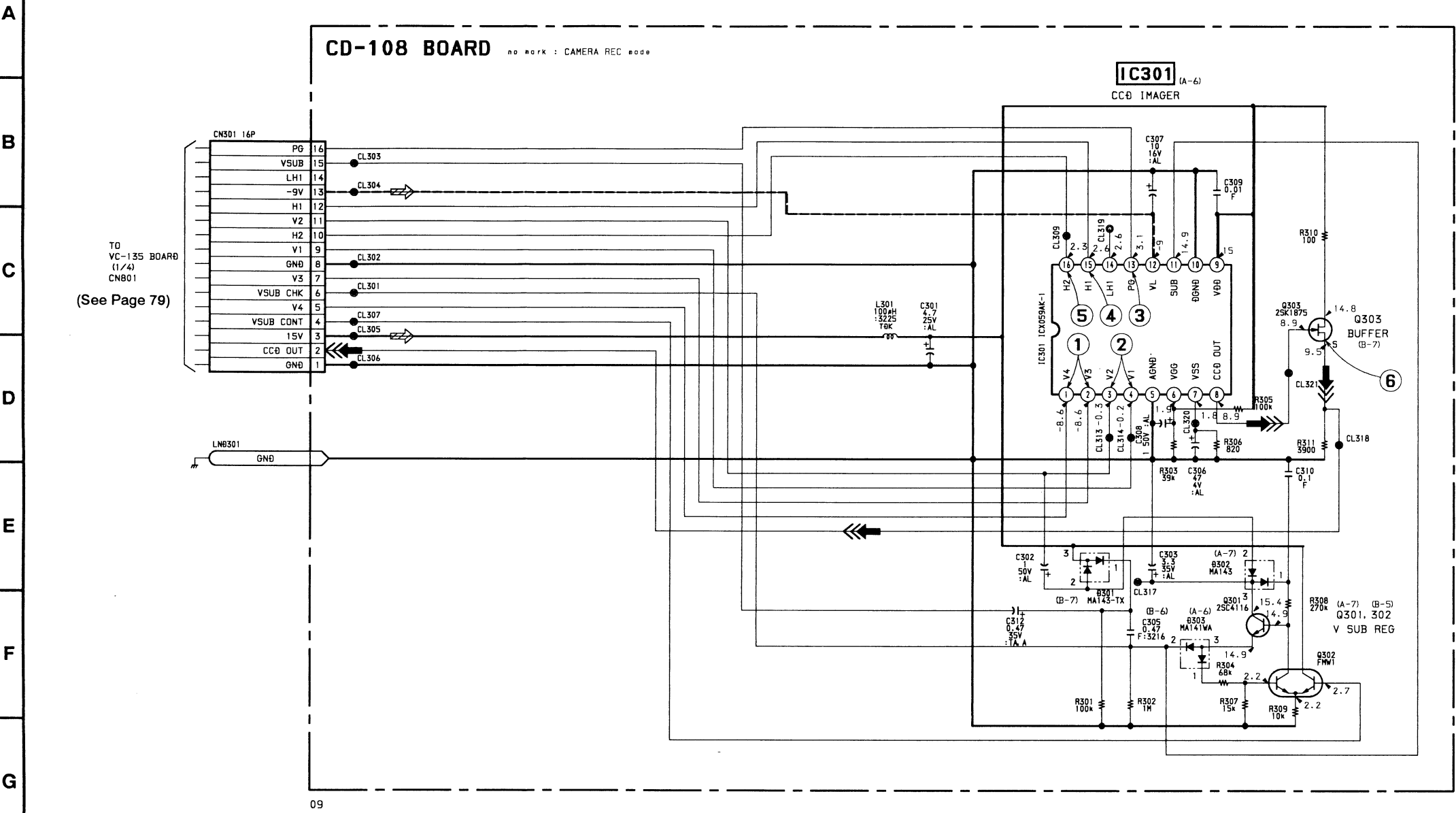


RD



CD-108 (CCD IMAGER) SCHEMATIC DIAGRAM

— Ref. No. CD-108 BOARD: 1000 series —



• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡➡➡
PB			

Note on the CCD imager replacement

- Some of this units require the correction data by the CCD imager (IC301 on CD-108 board), some do not. The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC702 on VC-135 board), and also written on the CCD data label put on the shield case (upper) of the DD-58 board. The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.
- The CCD imager is not mounted for the already mounted CD-108 board supplied as the repair parts. When replacing the CD-108 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure. Also, prevent the receiving light section from dust attached and strong light.

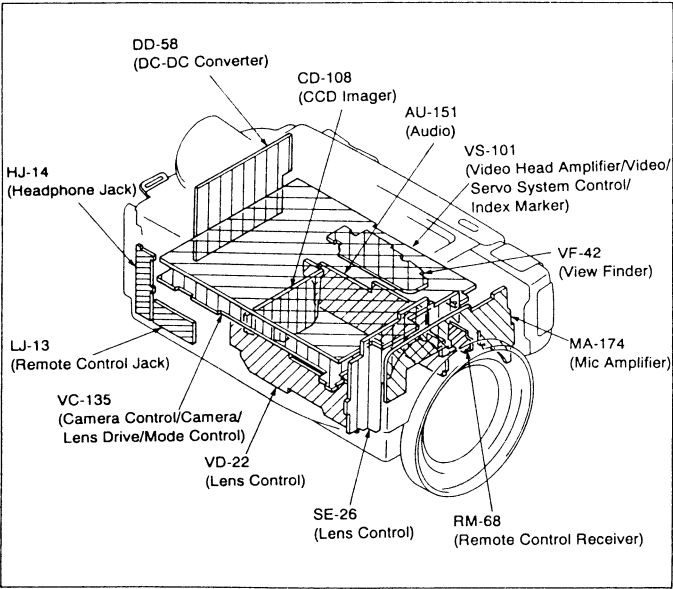
SE-26 (LENS CONTROL), VD-22 (LENS CONTROL) PRINTED WIRING BOARDS

— Ref. No. SE-26, VD-22 BOARDS: 2000 series —

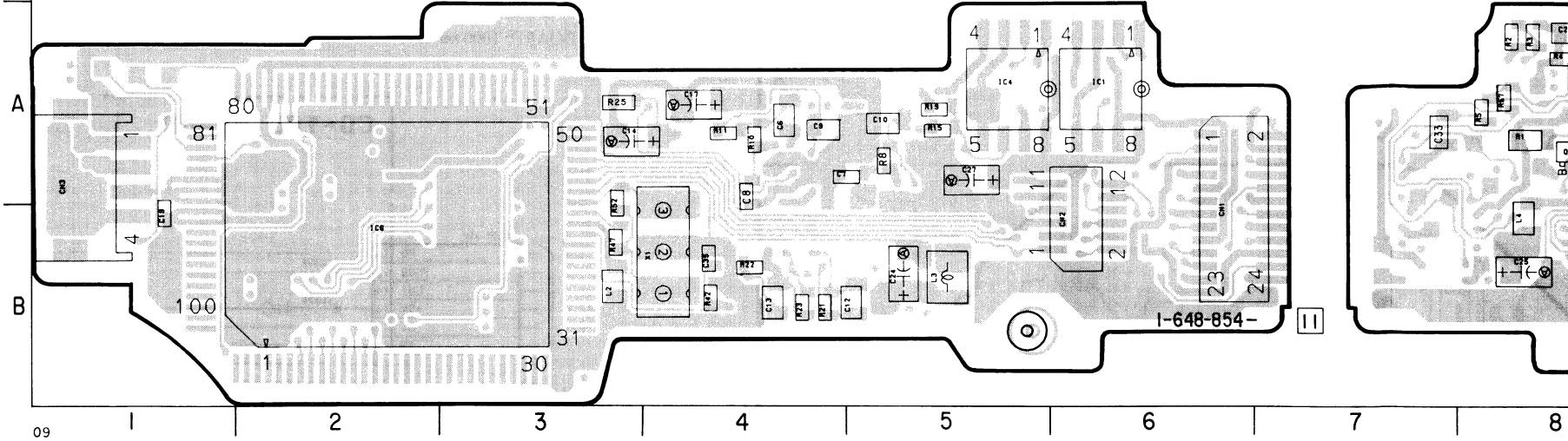
- For printed wiring boards.
- VD-22, SE-26 boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

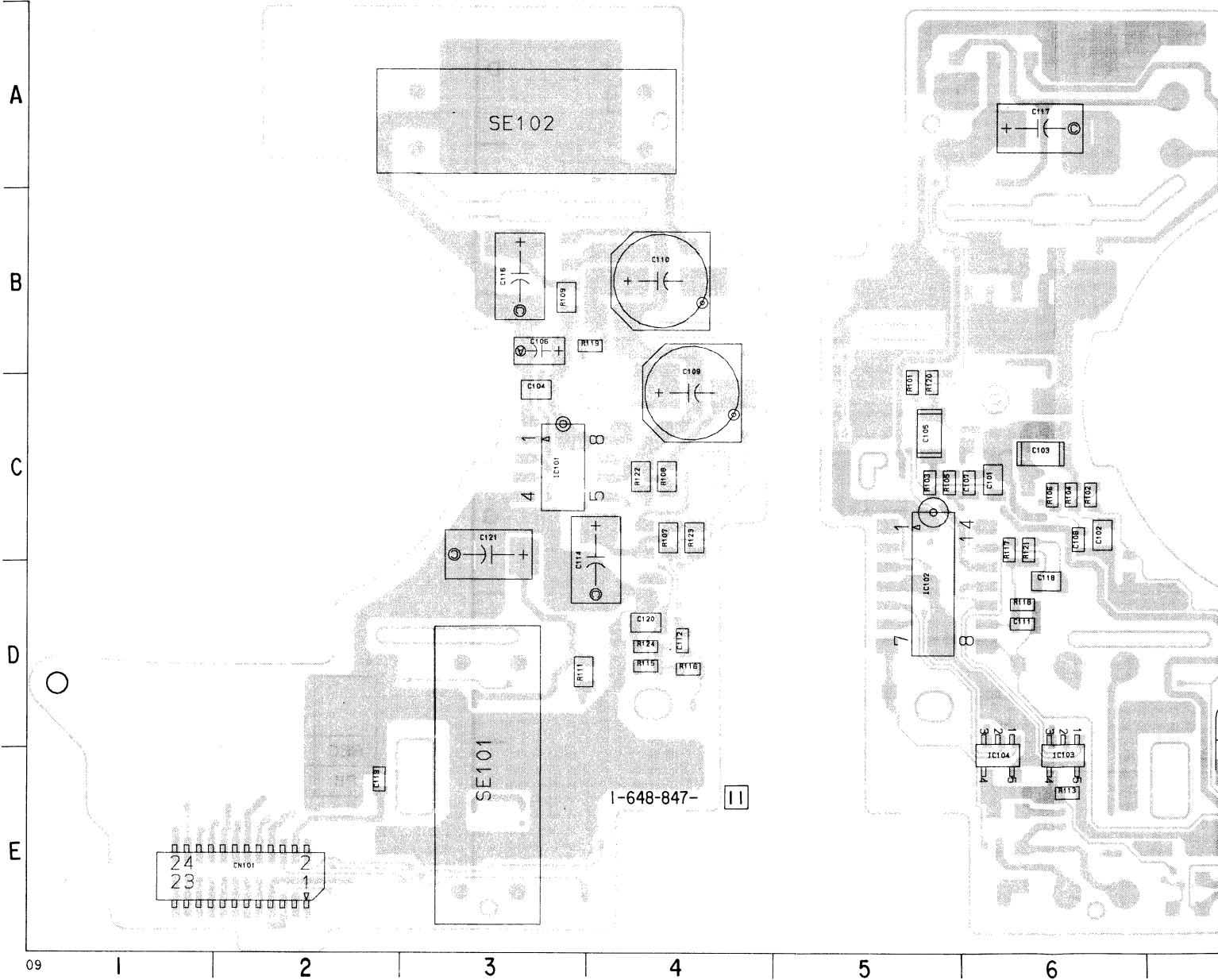


VD-22 BOARD (COMPONENT SIDE)



VD-22 BOARD (CONDUCTOR SIDE)

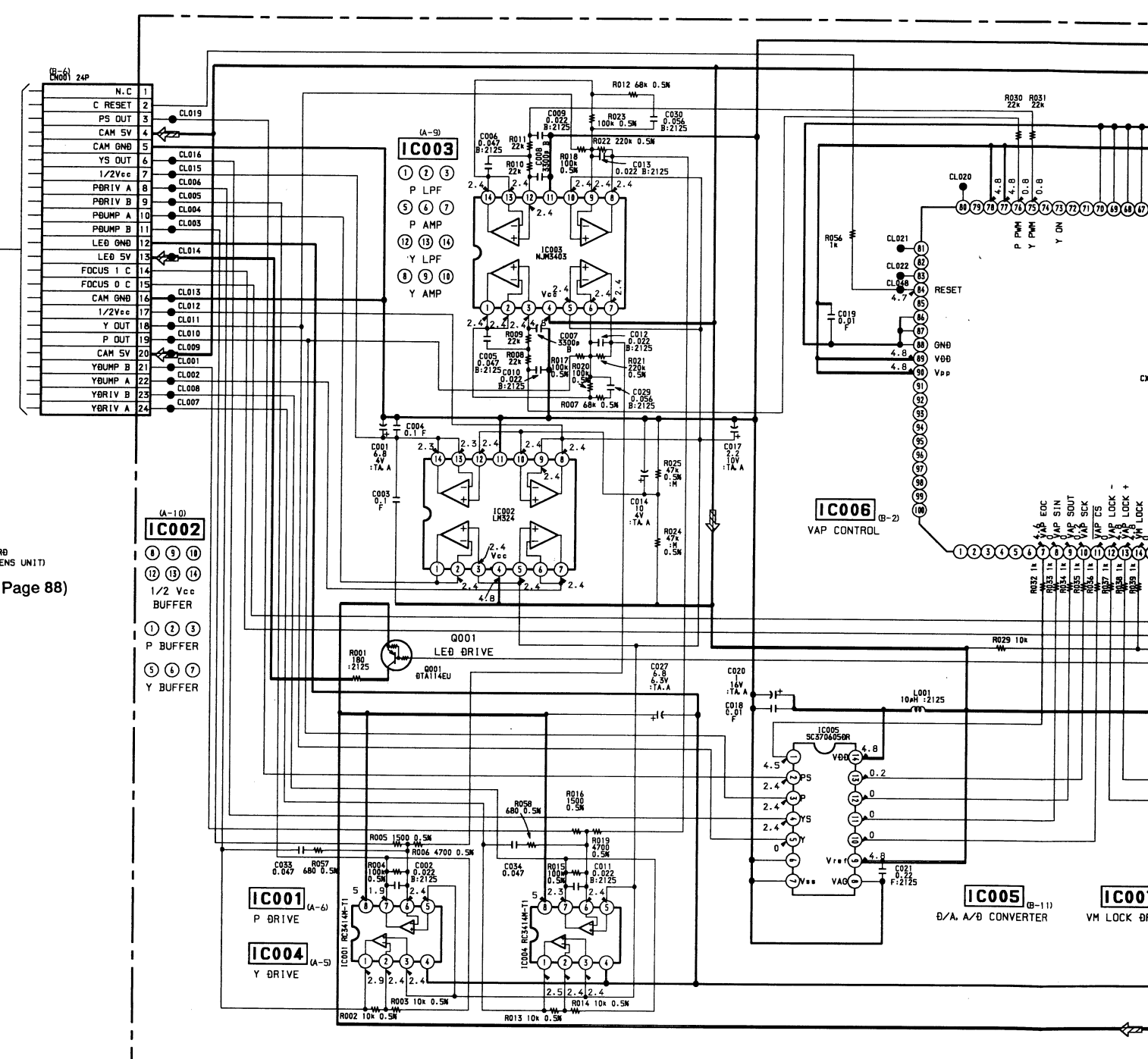
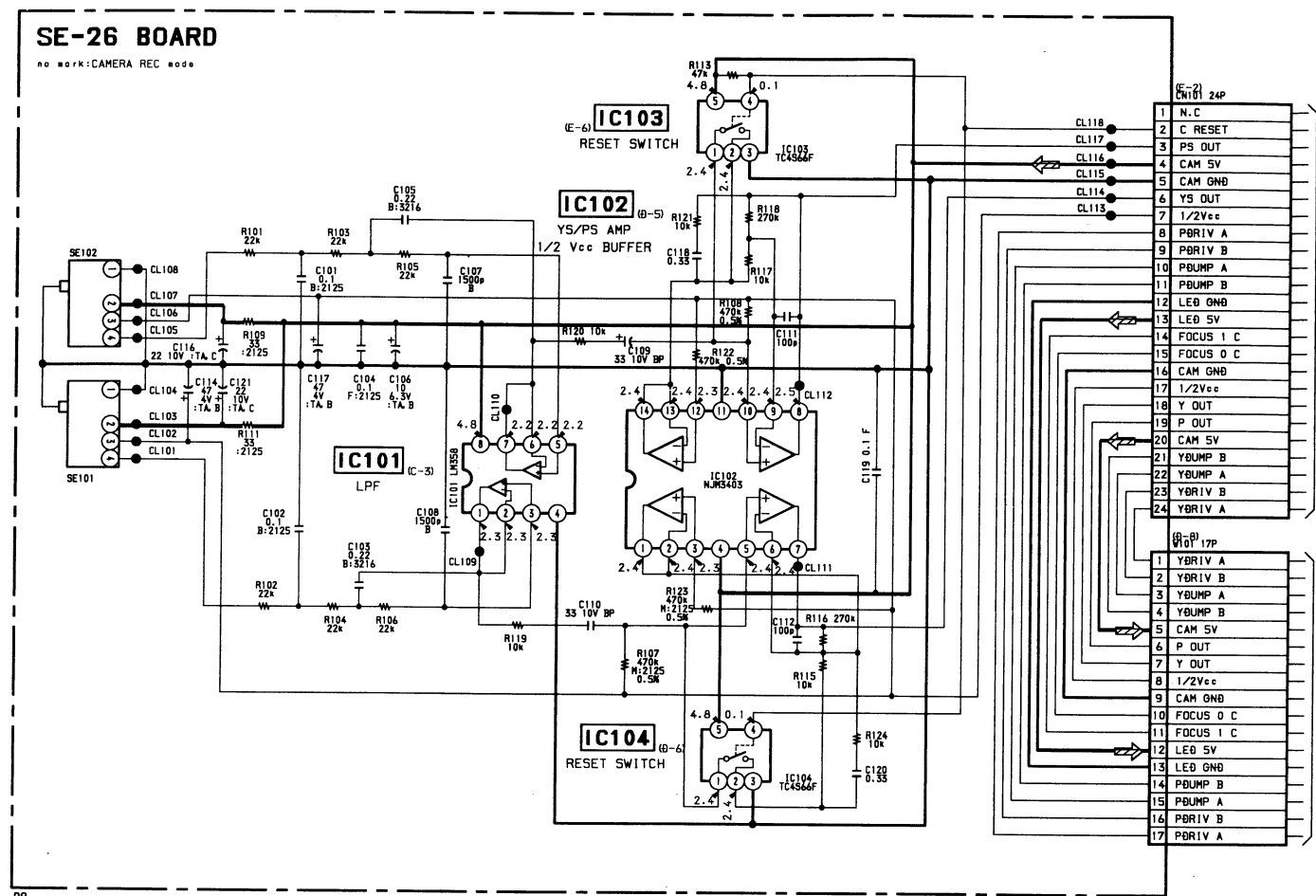
SE-26 BOARD (COMPONENT SIDE)

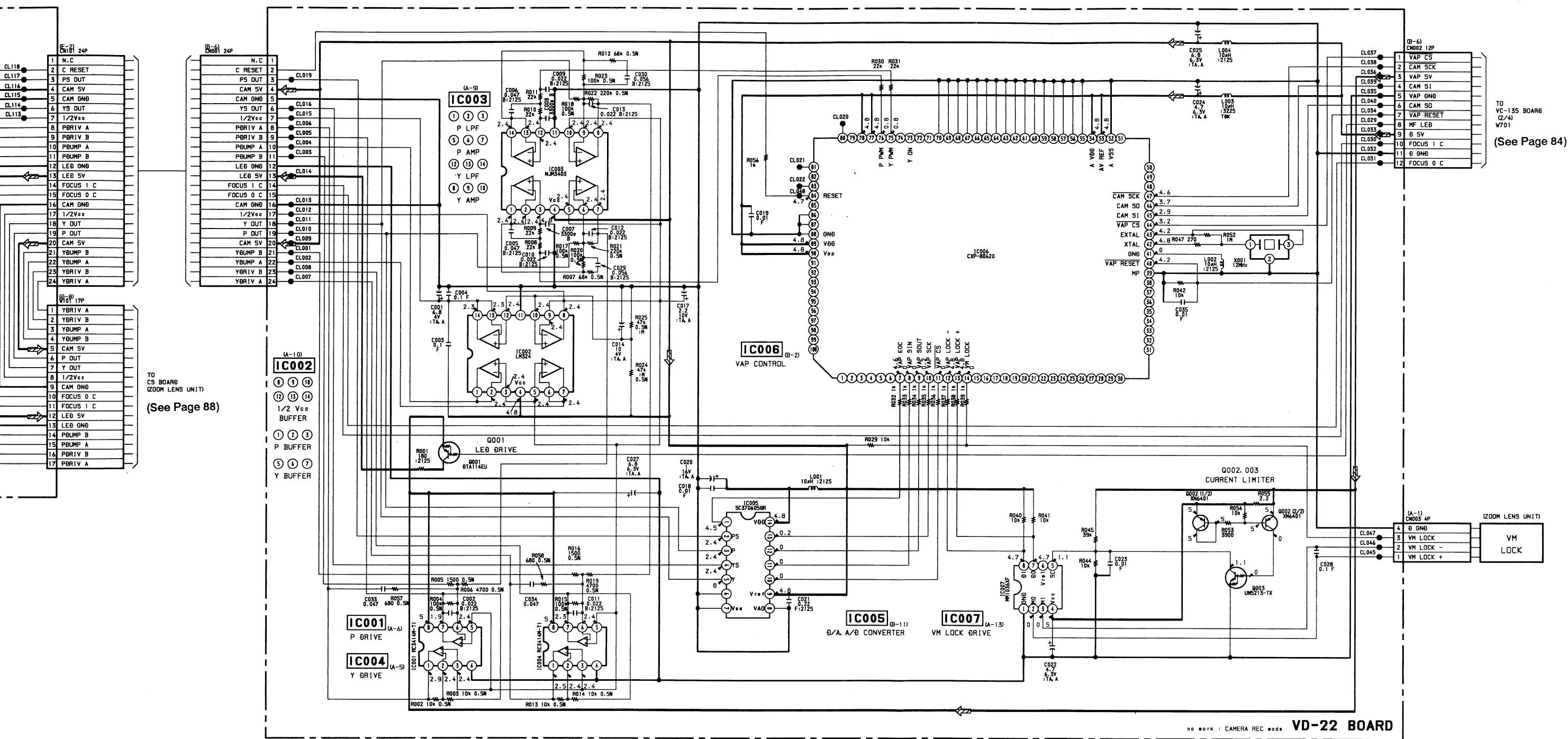


SE-26 BOARD (CONDUCTOR SIDE)

SE-26 (LENS CONTROL), VD-22 (LENS CONTROL) SCHEMATIC DIAGRAMS

— Ref. No. SE-26, VD-22 BOARDS: 2000 series —





VS-101 (VIDEO HEAD AMPLIFIER, VIDEO, SERVO/SYSTEM CONTROL, INDEX MARKER) PRINTED WIRING BOARD

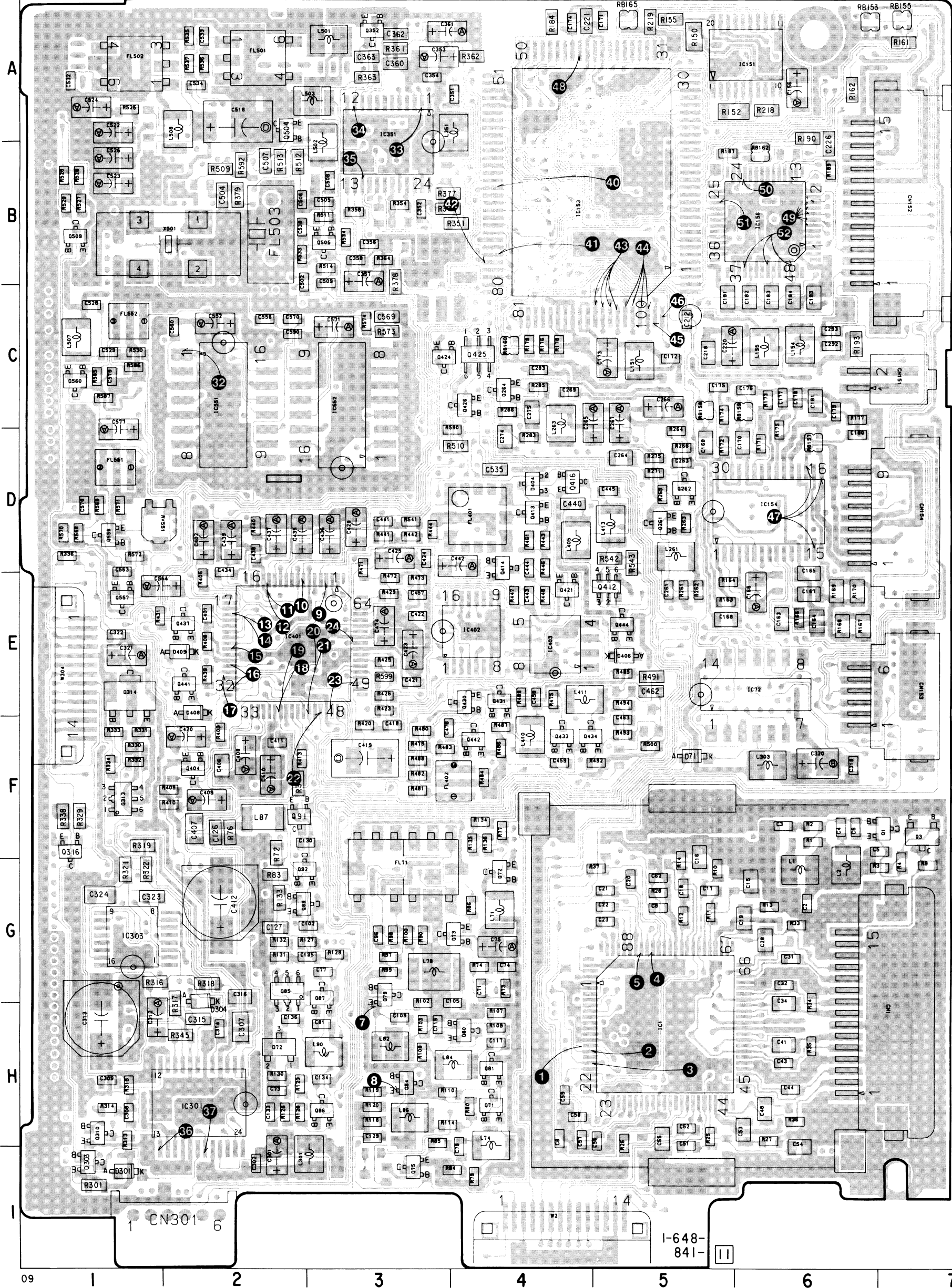
— Ref. No. VS-101 BOARD: 3000 series —

- For printed wiring boards.
- VS-101 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

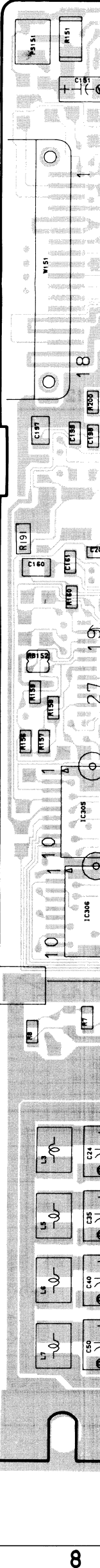
Caution:

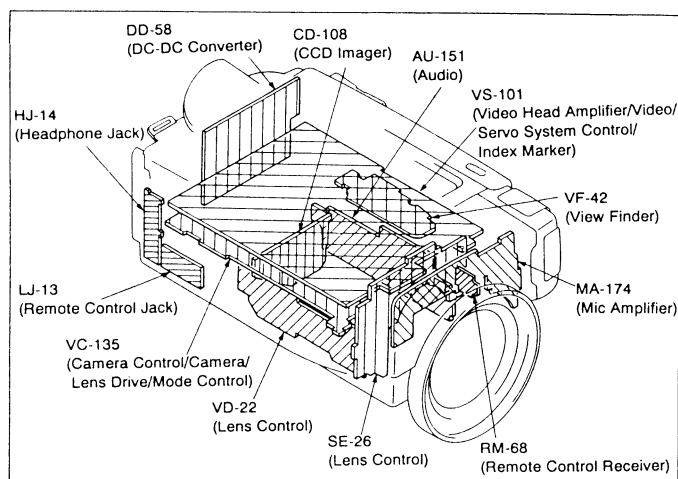
Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: Parts on the parts face side seen from the parts face are indicated.

VS -101 BOARD (COMPONENT SIDE)

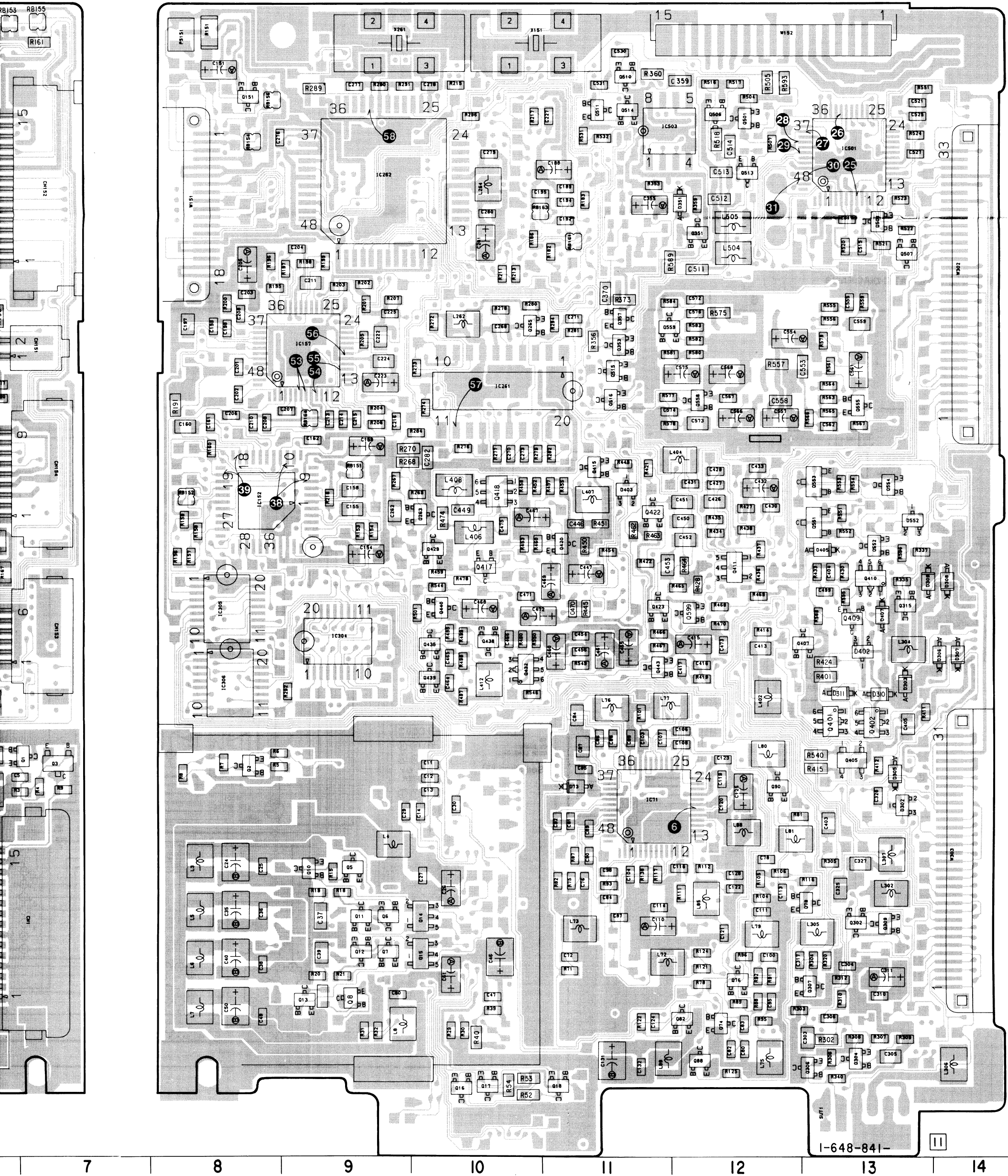


VS-101 BOARD (PATTERN FACE SIDE)





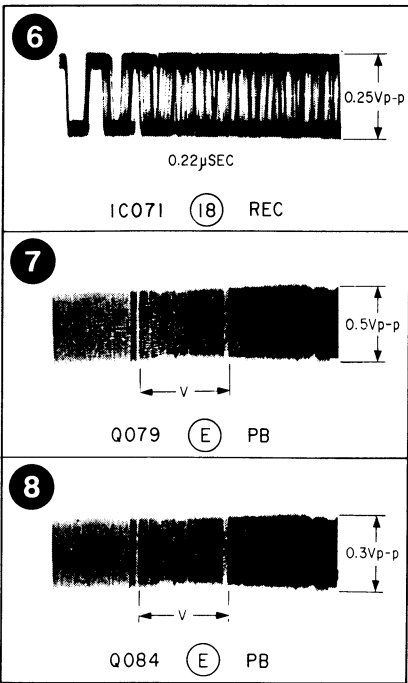
VS-101 BOARD (CONDUCTOR SIDE)



A —
B —
C —
D —
E —
F —
G —
H —
I —
J —



VS-101 BOARD (2/6)



• SIGNAL PATH

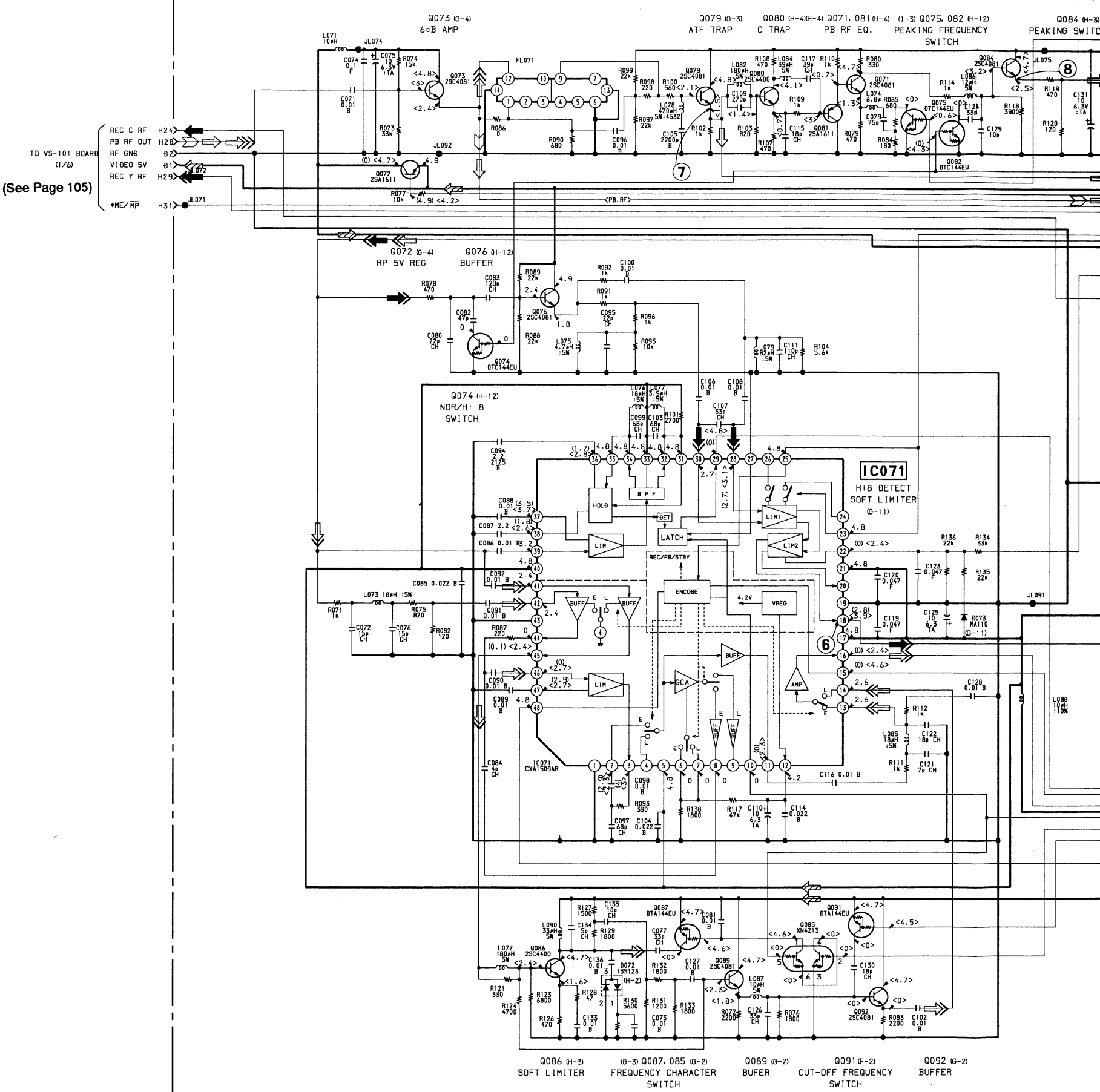
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡		➡
PB	➡	➡➡	➡➡➡	➡

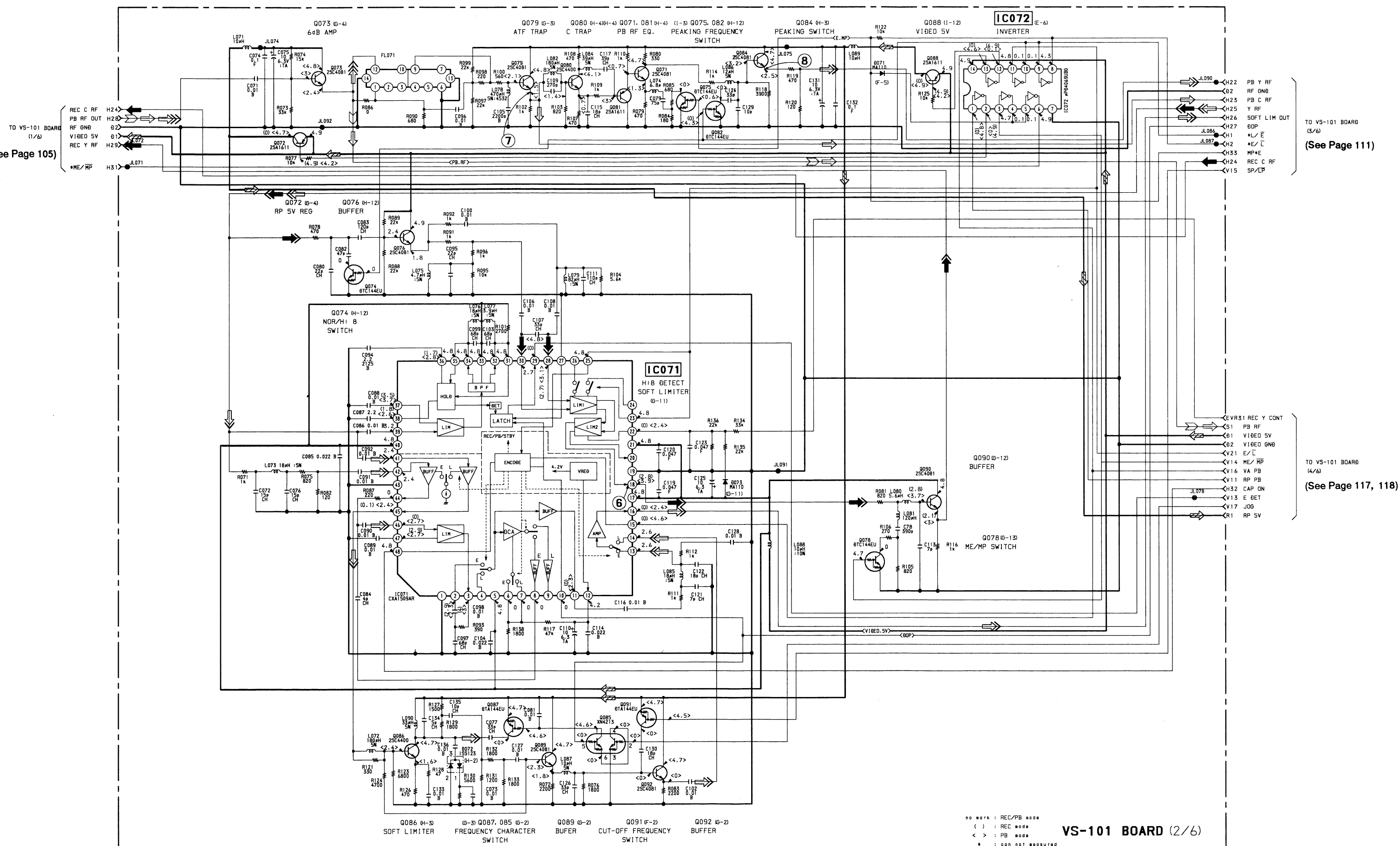
	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal			⏏

VS-101 (VIDEO) SCHEMATIC DIAGRAM

• Refer to page 102 for Printed Wiring Board.

— Ref. No. VS-101 BOARD: 3000 series —





— Ref. No. VS-101 BOARD: 3000 series —

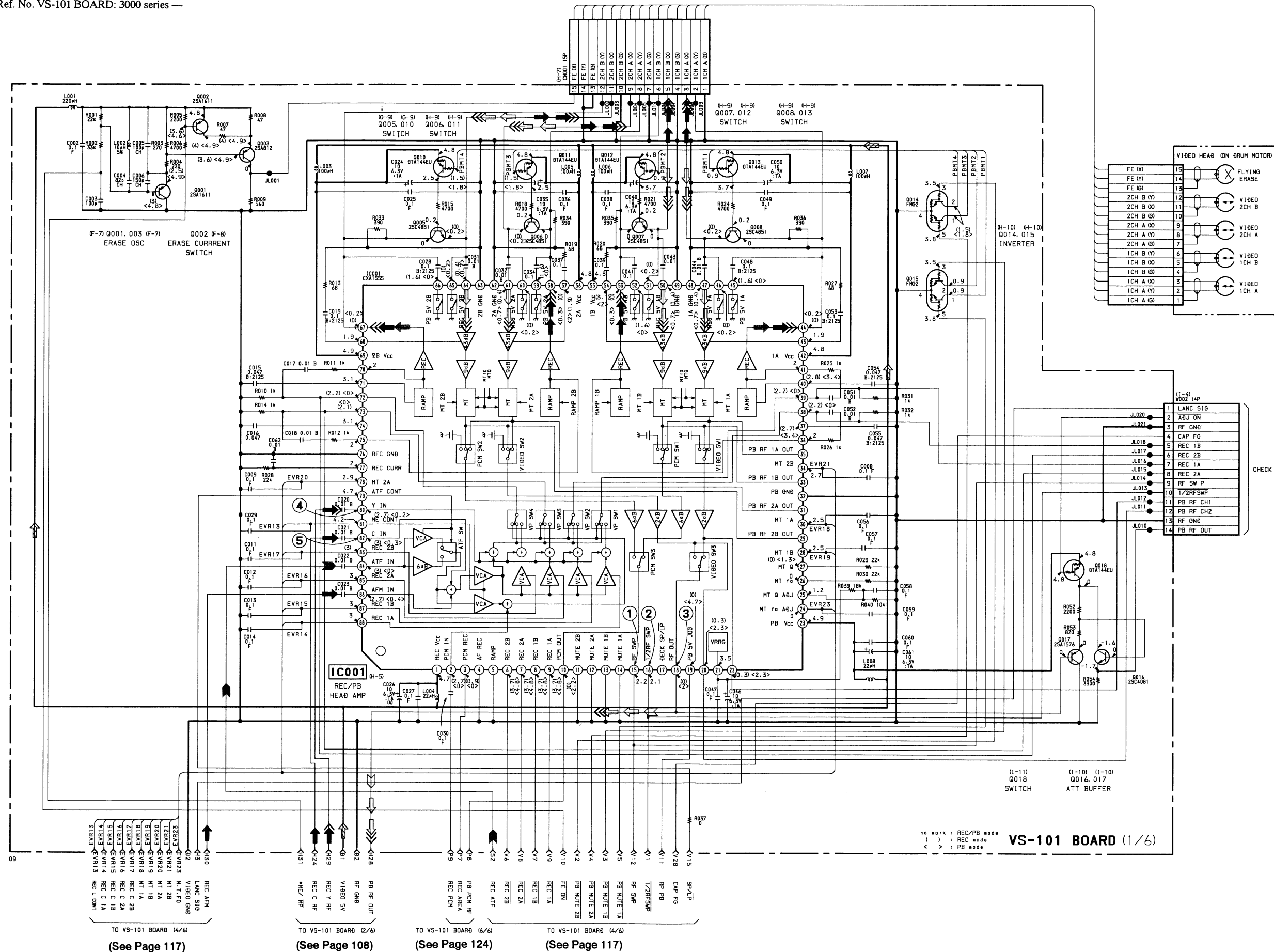




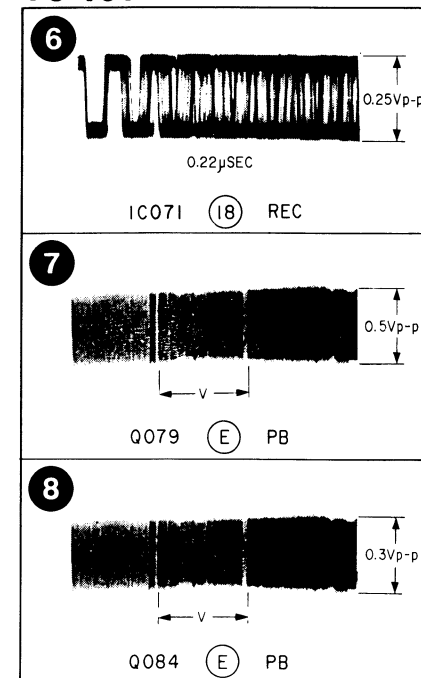
Figure 1 displays five oscilloscope waveforms, each labeled with a number in a circle and associated parameters:

- 1** IC001 (15) REC/PB: A square wave with a period of $2V$ and a peak-to-peak voltage of $5V_{p-p}$.
- 2** IC001 (16) REC/PB: A square wave with a period of $4V$ and a peak-to-peak voltage of $5V_{p-p}$.
- 3** IC001 (18) PB: A noisy signal with a period of V and a peak-to-peak voltage of $0.5V_{p-p}$.
- 4** IC001 (80) REC: A complex, oscillatory signal with a peak-to-peak voltage of $0.3V_{p-p}$.
- 5** IC001 (82) REC: A complex, oscillatory signal with a period of H and a peak-to-peak voltage of $0.1V_{p-p}$.

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	➡
PB			➡➡➡	➡

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➡		➡

VS-101 BOARD (2/6)

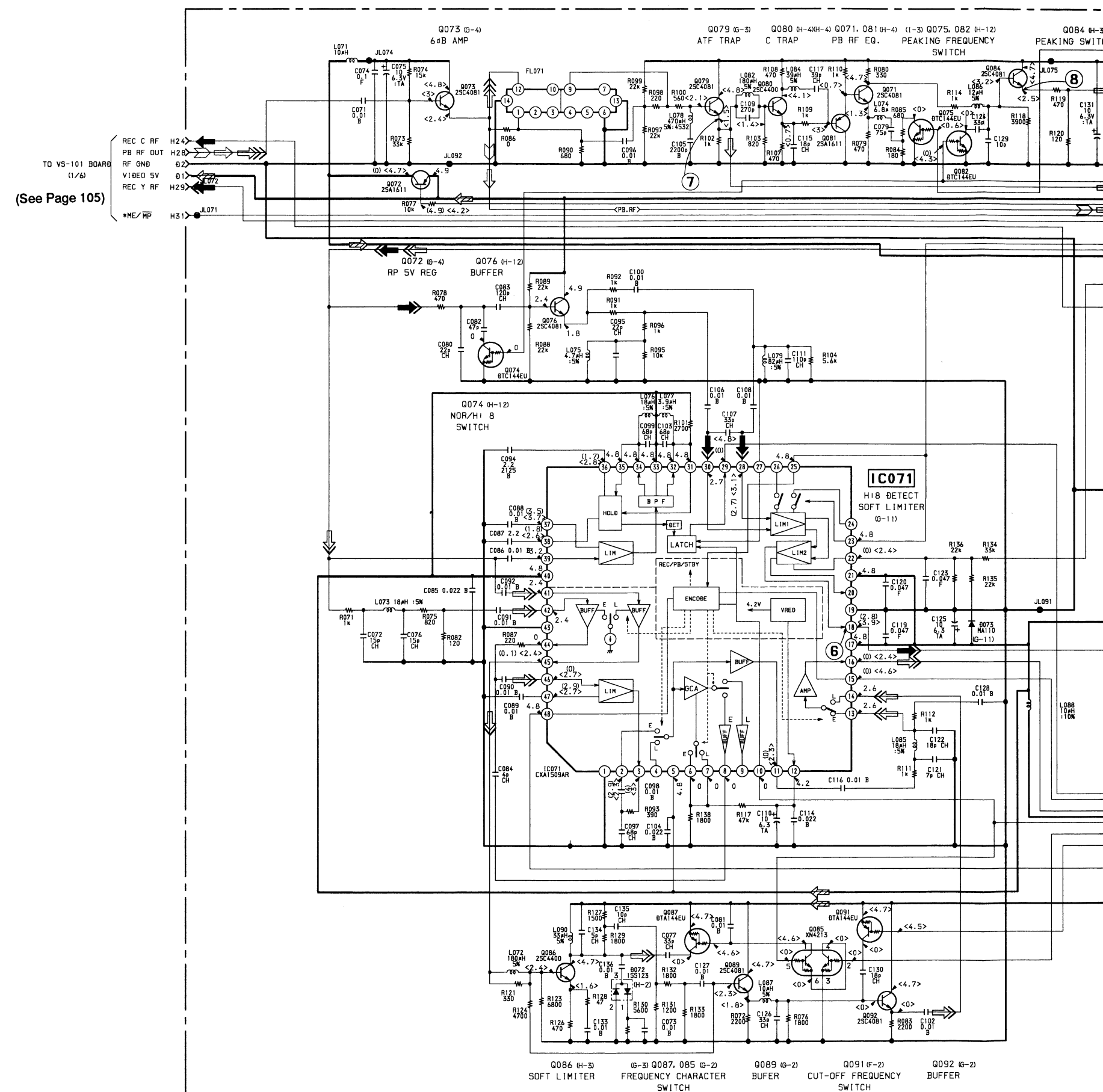


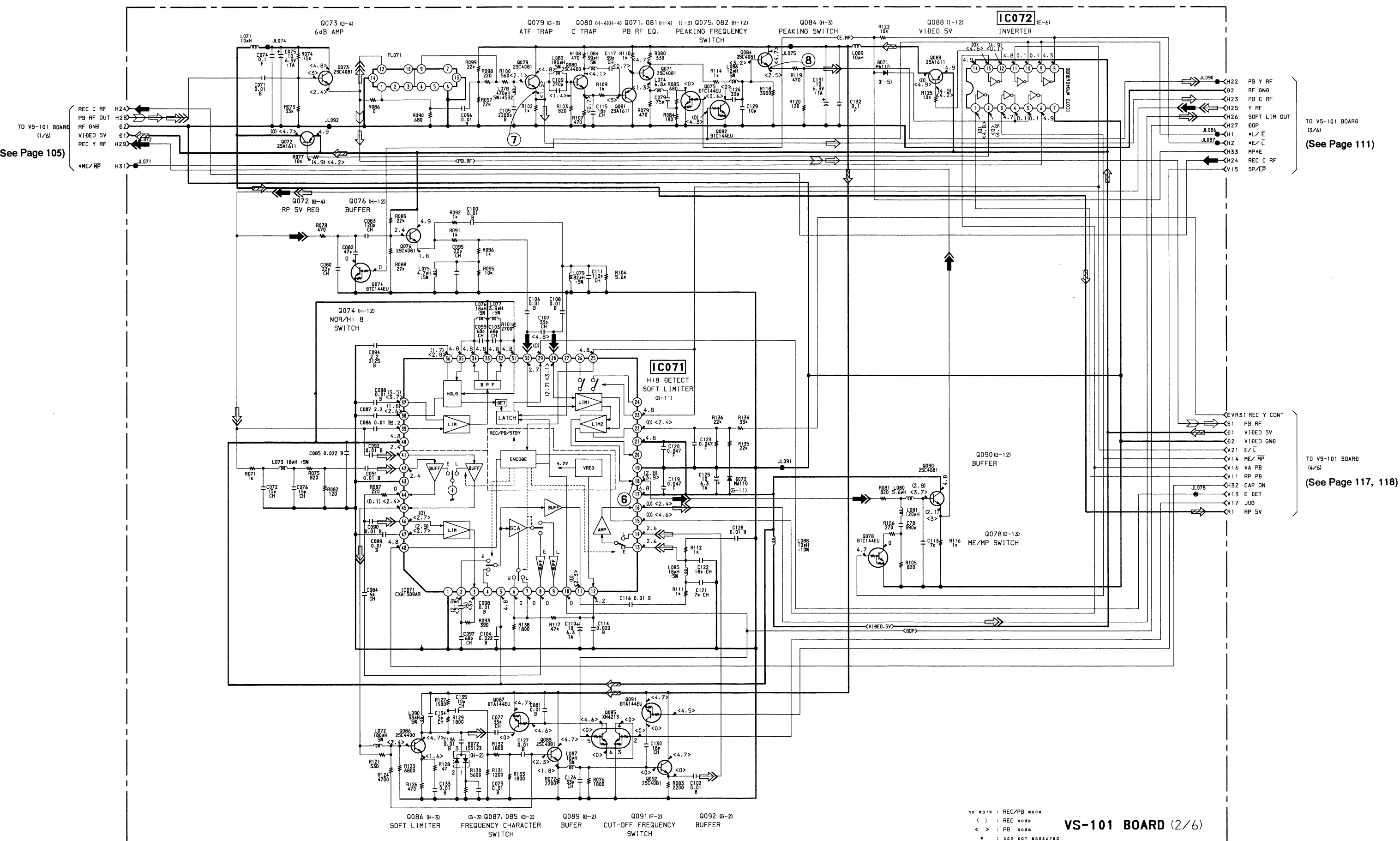
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡		➡
PB	➡	➡➡	➡➡➡	➡

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal			▷

— Ref. No. VS-101 BOARD: 3000 series —





— Ref. No. VS-101 BOARD: 3000 series —

Q401, 402
PAL JOG
SWITCH

Q410 (E-13)
VOB SELECT

Q404
VIDEO
OUT
INHIBIT

Q405 (F-13)
VIDEO
INHIBIT

Q407
MUTE

Q424
SWITCH (E-13)
COMP OFF
SWITCH

Q430, 431, 442
E/L SWITCH

Q432 <1.6>
Q433
EQ. BIAS

Q434
EQ. SWITCH

Q435 (E-10)
EQ. PEAKING FREQ.

Q438
PEAKING AMP

Q440
BUFFER

Q439
PEAKING FREQ.

Q441
CUT-OFF FREQ.

Q442
CARRIER SET
DEVIATION

Q401, 402
PAL JOG
SWITCH

Q410 (E-13)
VOB SELECT

Q404
VIDEO
OUT
INHIBIT

Q405 (F-13)
VIDEO
INHIBIT

Q407
MUTE

Q424
SWITCH (E-13)
COMP OFF
SWITCH

Q430, 431, 442
E/L SWITCH

Q432 <1.6>
Q433
EQ. BIAS

Q434
EQ. SWITCH

Q435 (E-10)
EQ. PEAKING FREQ.

Q438
PEAKING AMP

Q440
BUFFER

Q439
PEAKING FREQ.

Q441
CUT-OFF FREQ.

Q442
CARRIER SET
DEVIATION

Q401, 402
PAL JOG
SWITCH

Q410 (E-13)
VOB SELECT

Q404
VIDEO
OUT
INHIBIT

Q405 (F-13)
VIDEO
INHIBIT

Q407
MUTE

Q424
SWITCH (E-13)
COMP OFF
SWITCH

Q430, 431, 442
E/L SWITCH

Q432 <1.6>
Q433
EQ. BIAS

Q434
EQ. SWITCH

Q435 (E-10)
EQ. PEAKING FREQ.

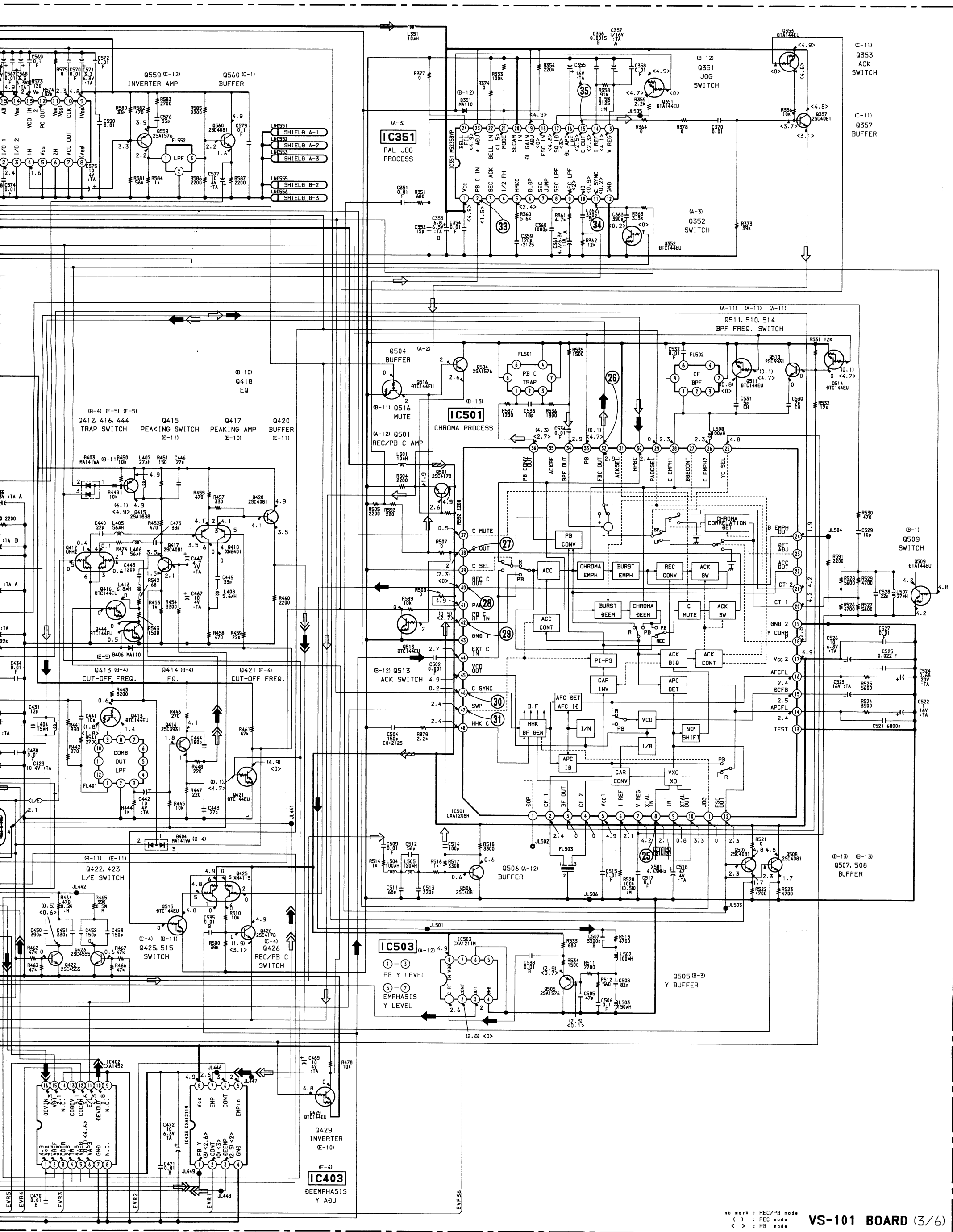
Q438
PEAKING AMP

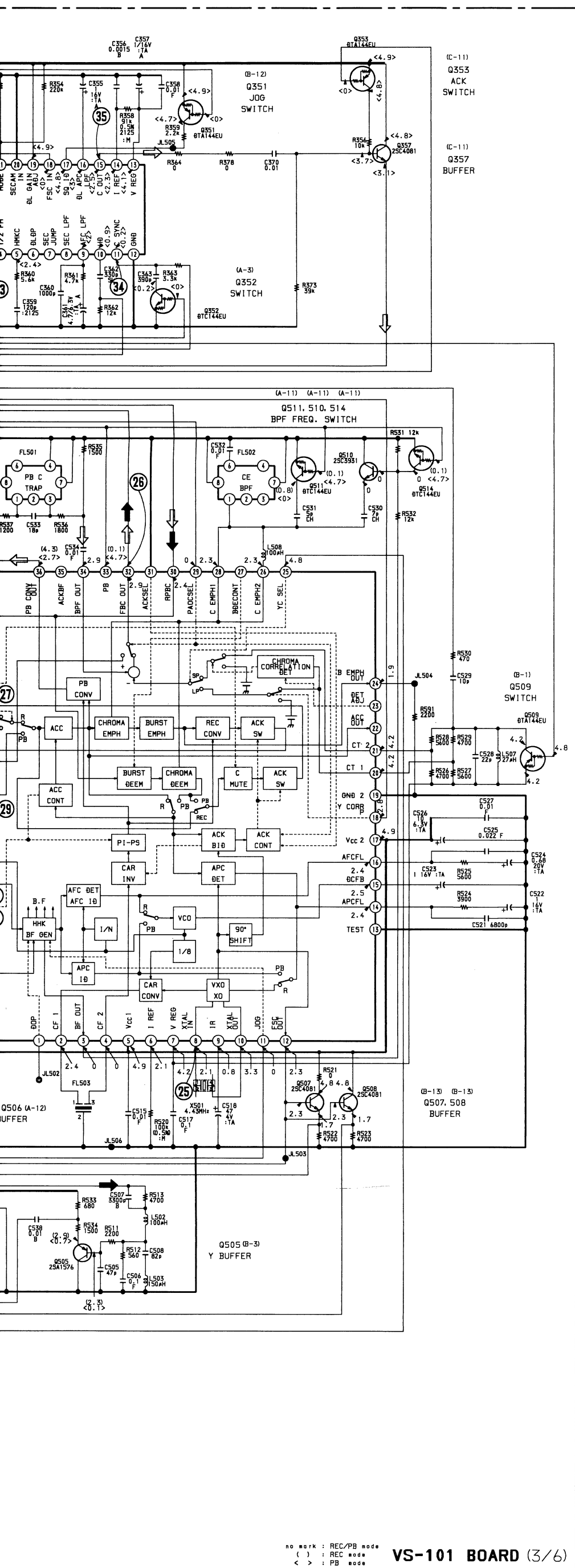
Q440
BUFFER

Q439
PEAKING FREQ.

Q441
CUT-OFF FREQ.

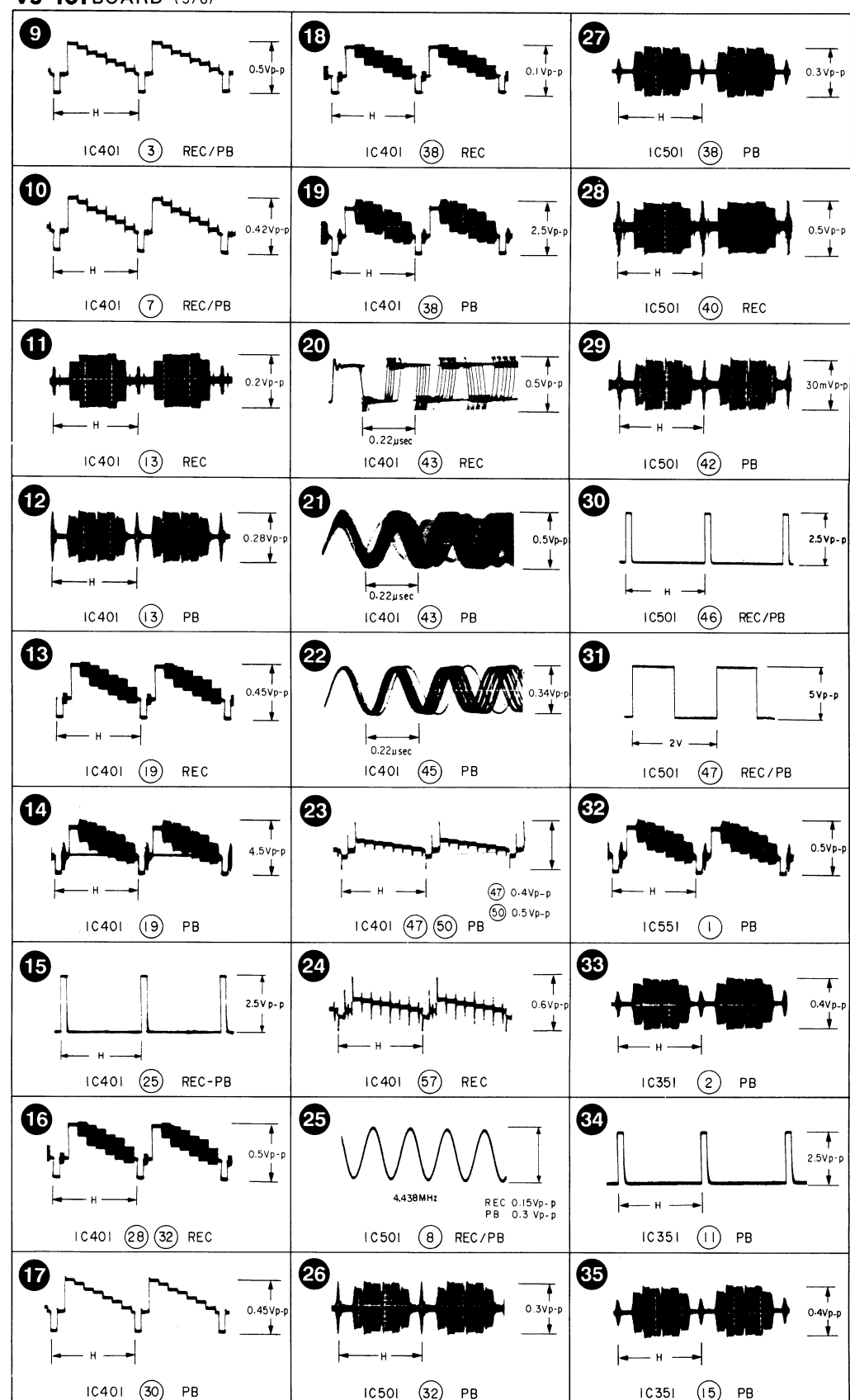
Q442
CARRIER SET
DEVIATION





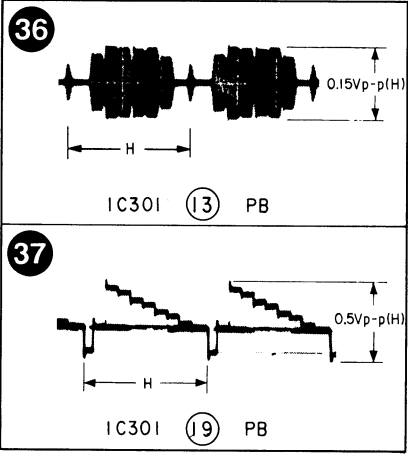
- **SIGNAL PATH**

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡➡	➡➡➡
PB	➡	➡➡	



— Ref. No. VS-101 BOARD: 3000 series —

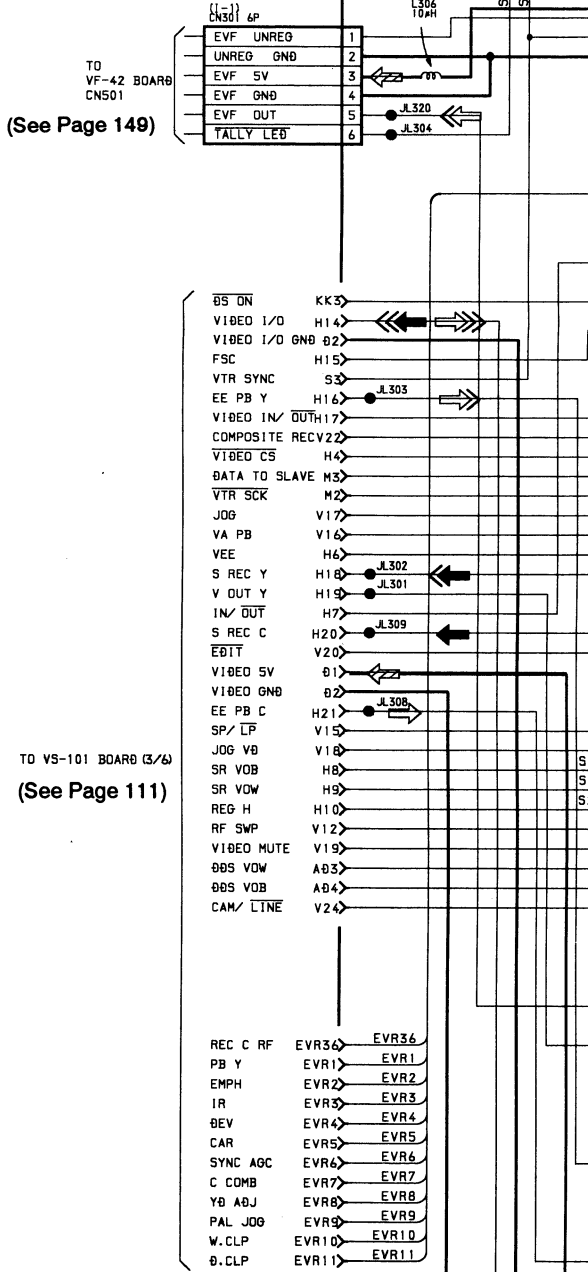
VS-101BOARD (4/6)



• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	➡
PB	➡	➡➡	➡➡➡	➡

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➡		➡





Page 119)

(See Page 121)

(See Page 105)

(See Page 105, 106)

(See Page 110)

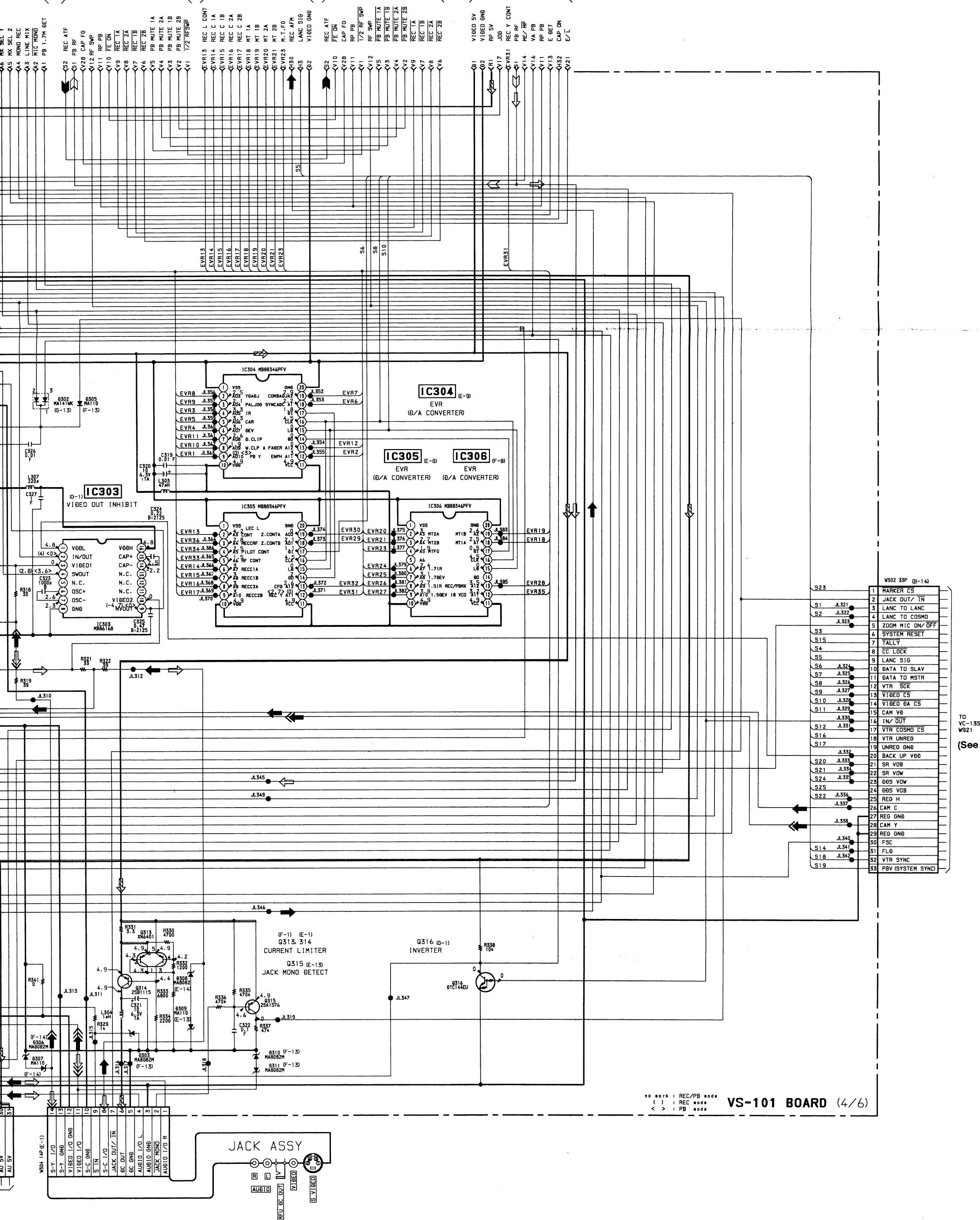
01 BOARD (5/6)

TO VS-101 BOARD (5/6)

TO VS-101 BOARD (1/6)

TO VS-101 BOARD (1/6)

TO VS-101 BOARD (2/6)



— Ref. No. VS-101 BOARD: 3000 series —

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P

1

2

3

4

5

6

7

8

9

10

11

TO VS-101 BOARD (4/6)
(See Page 117)TO VS-101 BOARD (4/6)
(See Page 124)TO VS-101 BOARD (4/6)
(See Page 117)TO
FP-423 BOARD
(See Page 128)TO
FP-423 BOARD
(See Page 128)TO
FP-423 BOARD
(See Page 128)TO
FP-423 BOARD
(See Page 128)TO
FP-423 BOARD
(See Page 128)

(See Page 154)

TO 00-58 BOARD CN233

(See Page 116)

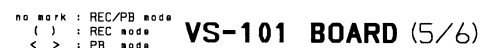
TO VS-101 BOARD (4/6)

M903
LOADING
MOTOR(C-7)
CN151 2PLOAD
UNLOADJL151
JL152JL151
JL152JL151
JL152JL151
JL152JL151
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JL152

0 VS-101 BOARD (4/6)

TO VS-101 BOARD (4/6)

TO VS-101 BOARD (4/6)

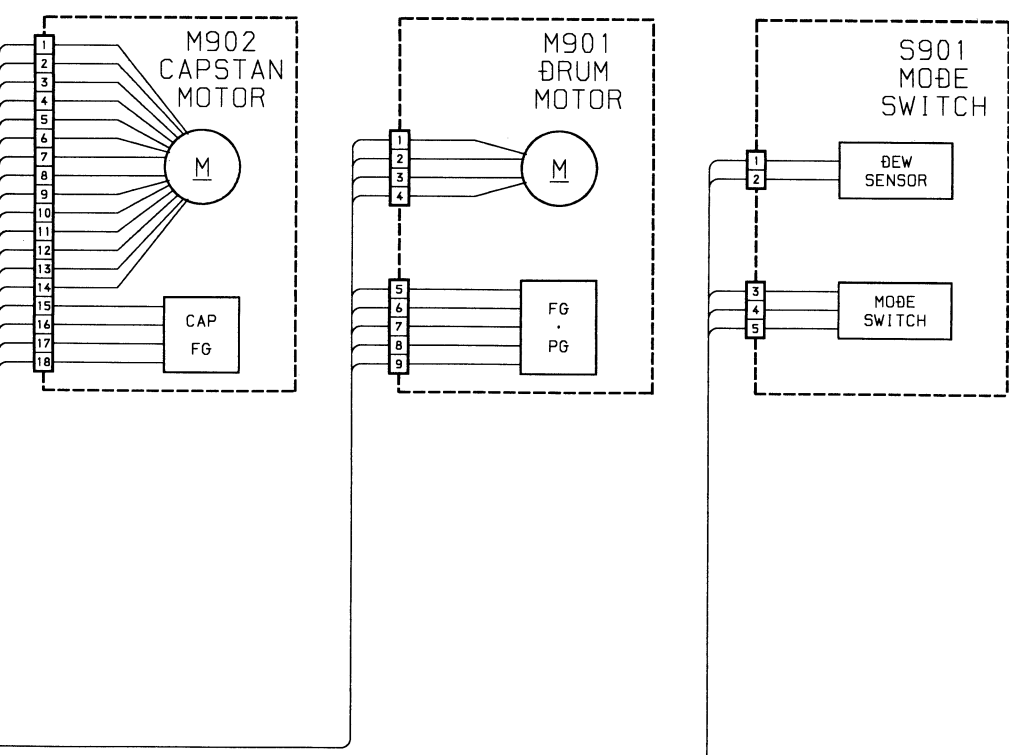
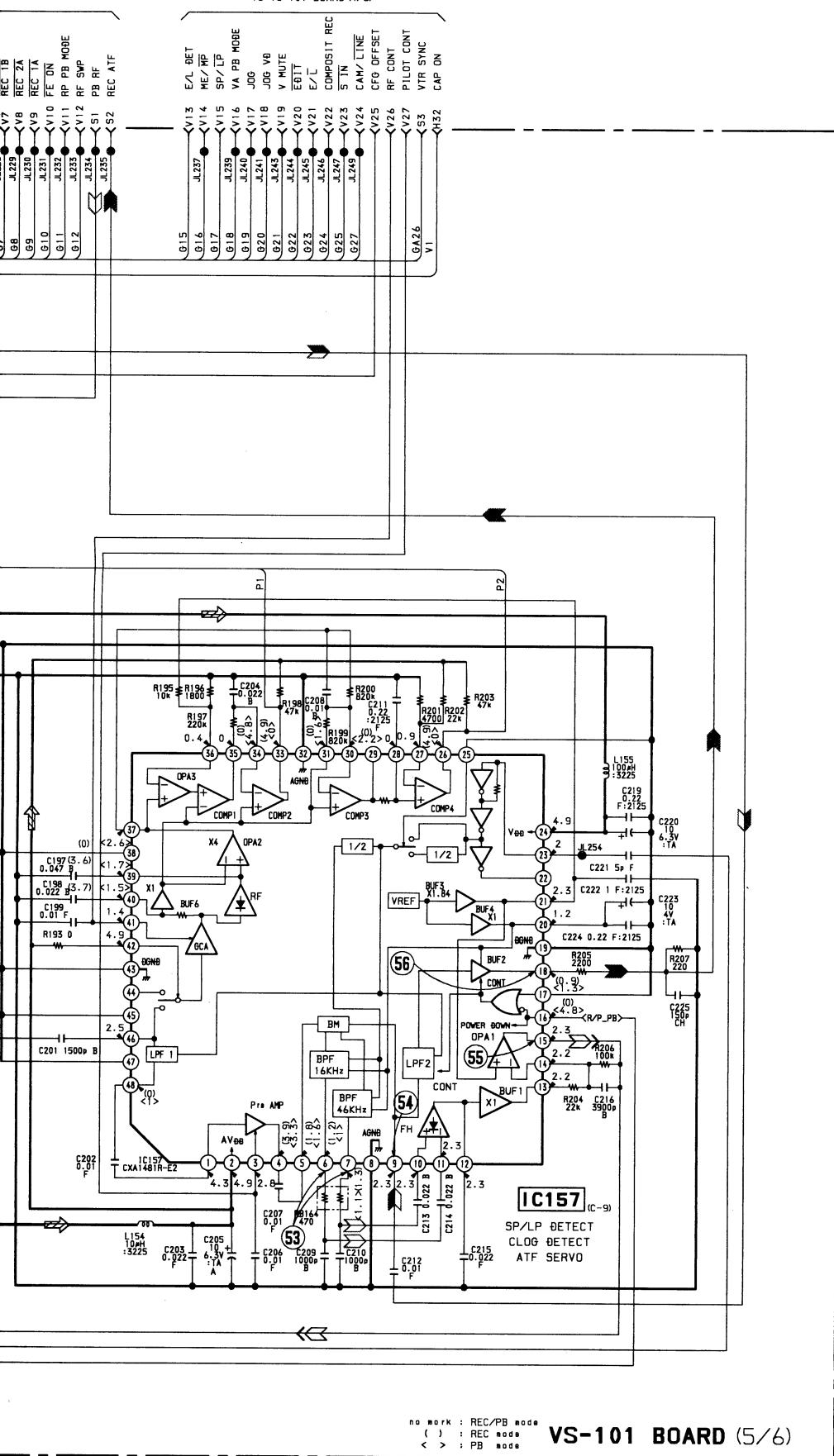


age 117)

(See Page 116, 117)

BOARD (4/6)

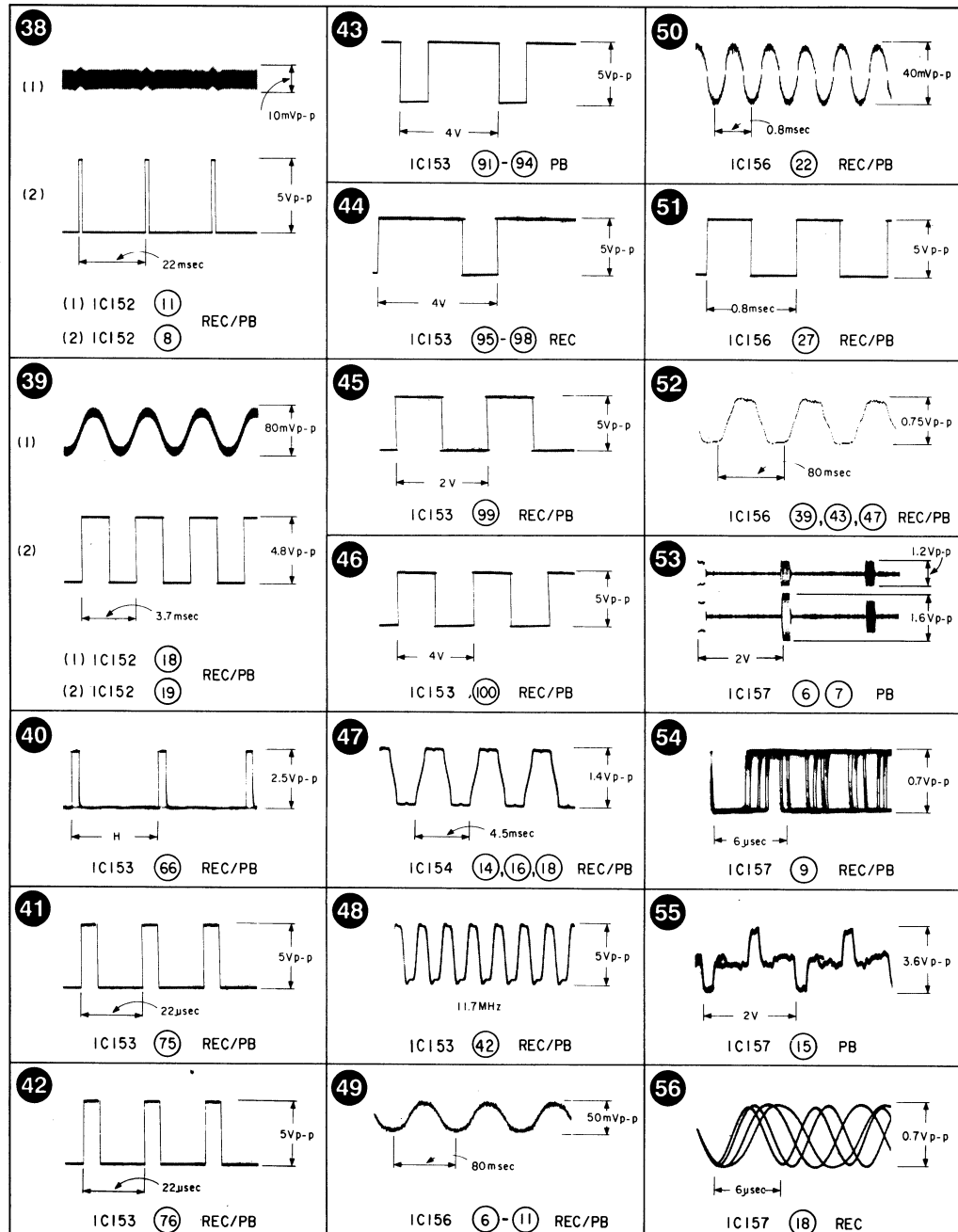
TO VS-101 BOARD (4/6)



Note:
The components identified by mark  or dotted line with mark  are critical for safety.
Replace only with part number specified.

- **SIGNAL PATH**

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal			

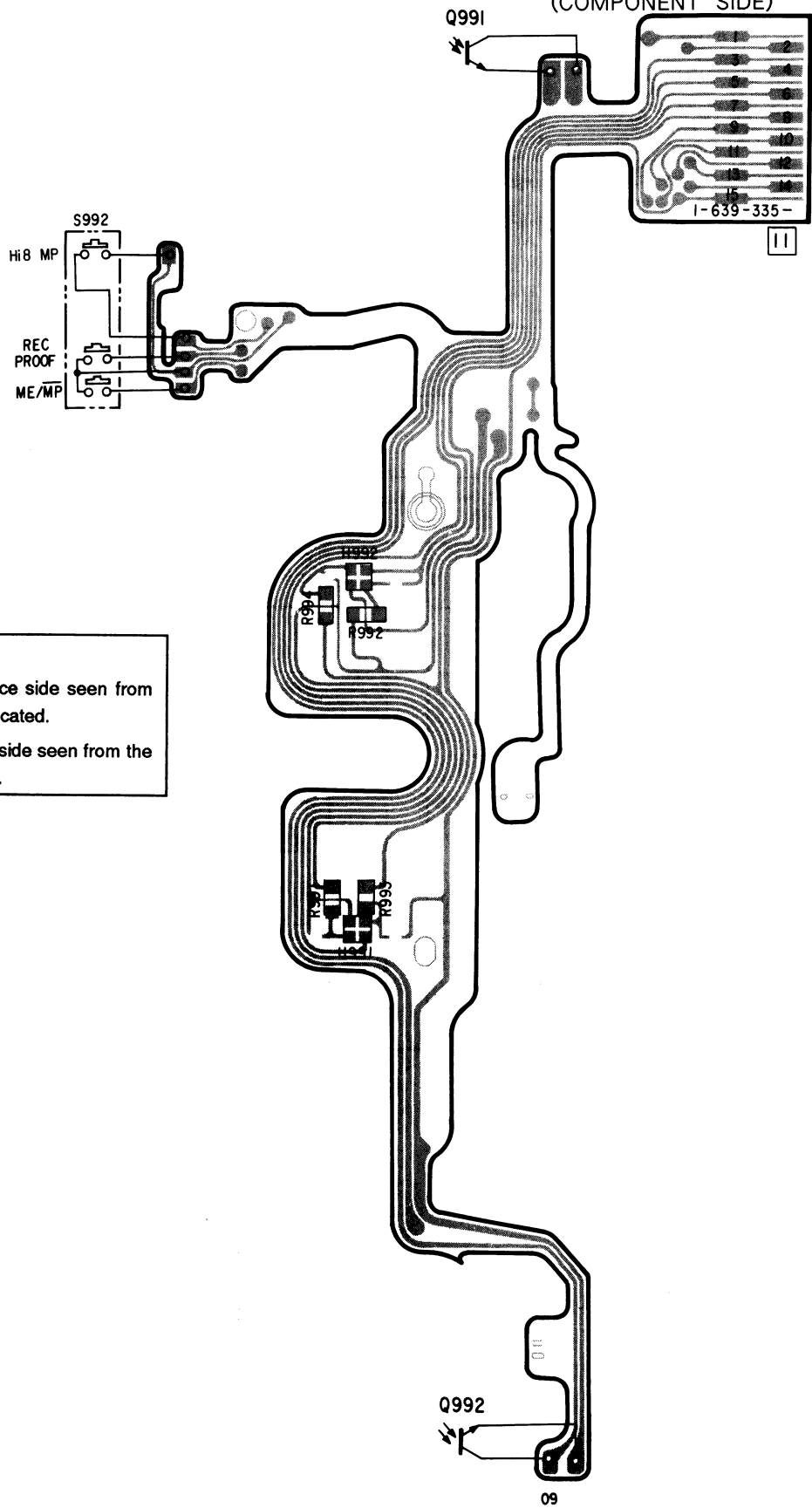
VS-101 BOARD (5/6)

FP-423 (TAPE SENSOR, SWITCH) PRINTED WIRING BOARD

— Ref. No. FP-423 BOARD: 4000 series —

FP-423 FLEXIBLE BOARD

(COMPONENT SIDE)



• For printed wiring boards.

• ● : Through hole is omitted.

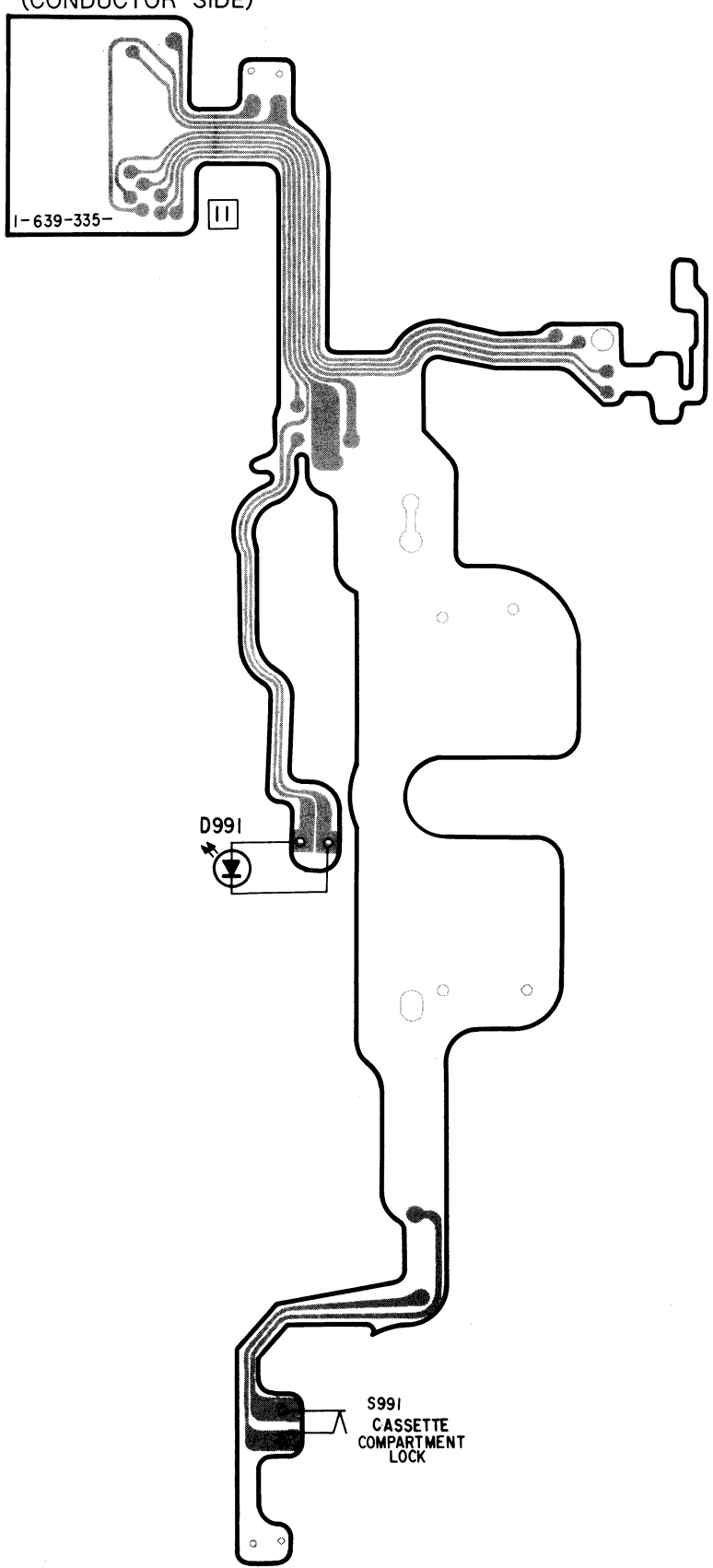
Caution:

Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.

Parts face side: Parts on the parts face side seen from the parts face are indicated.

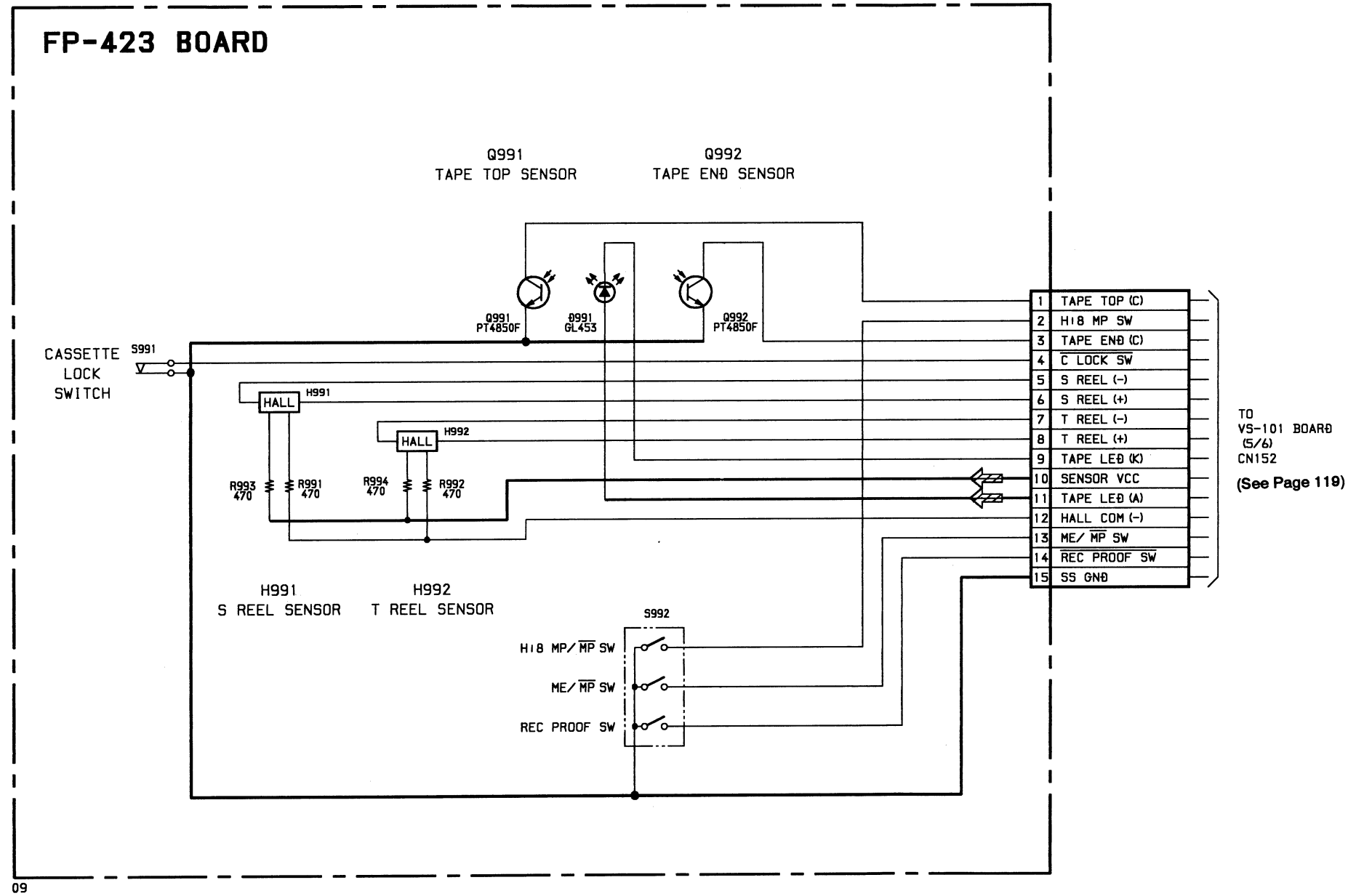
FP-423 FLEXIBLE BOARD

(CONDUCTOR SIDE)

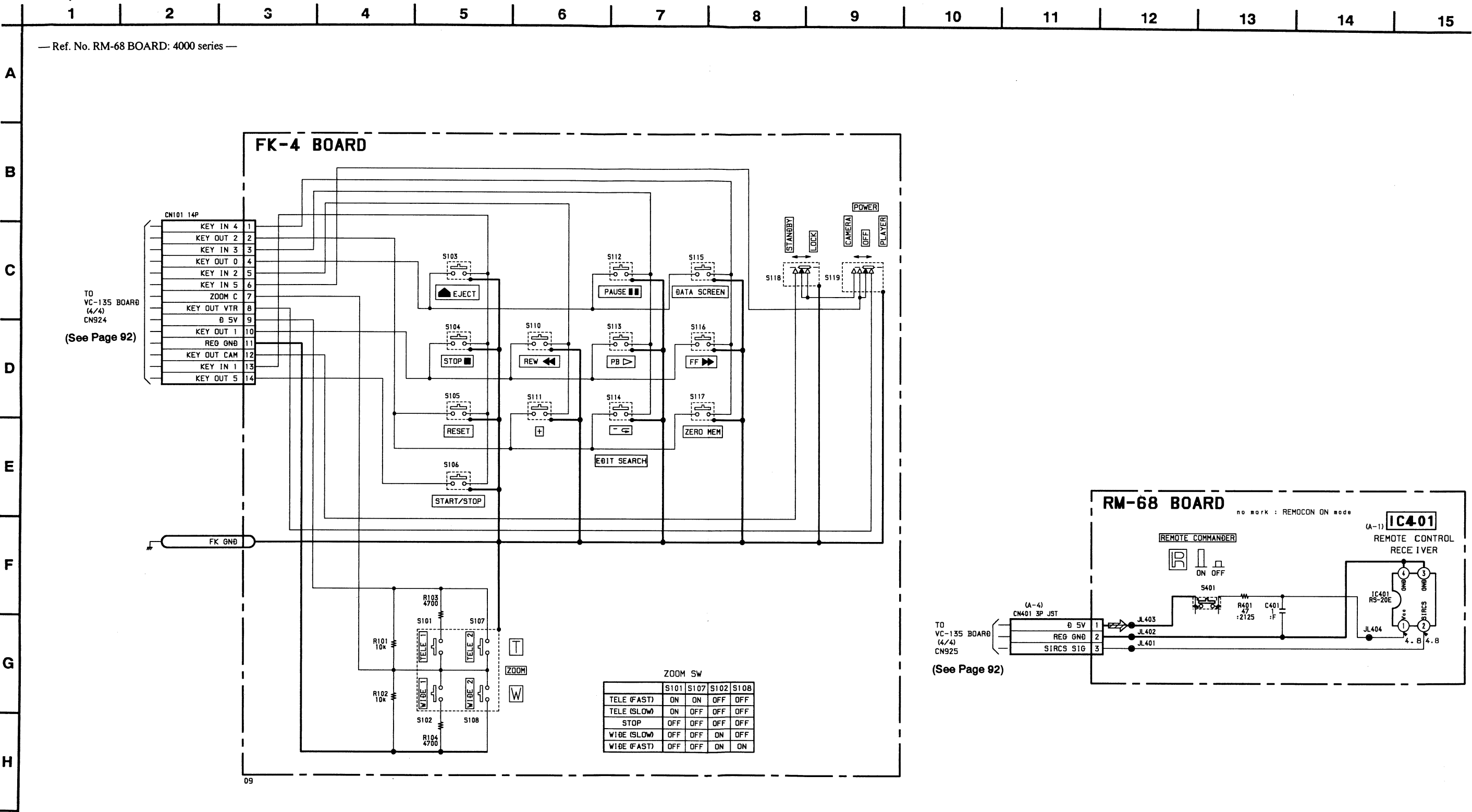


FP-423 (TAPE SENSOR, SWITCH) SCHEMATIC DIAGRAM

— Ref. No. FP-423 BOARD: 4000 series —



RM-68 (REMOTE CONTROL RECEIVER), FK-4 (VIDEO FUNCTION SWITCH) SCHEMATIC DIAGRAMS



RM-68 (REMOTE CONTROL RECEIVER) PRINTED WIRING BOARD

— Ref. No. RM-68 BOARD: 4000 series —

- FK-4 board is replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.

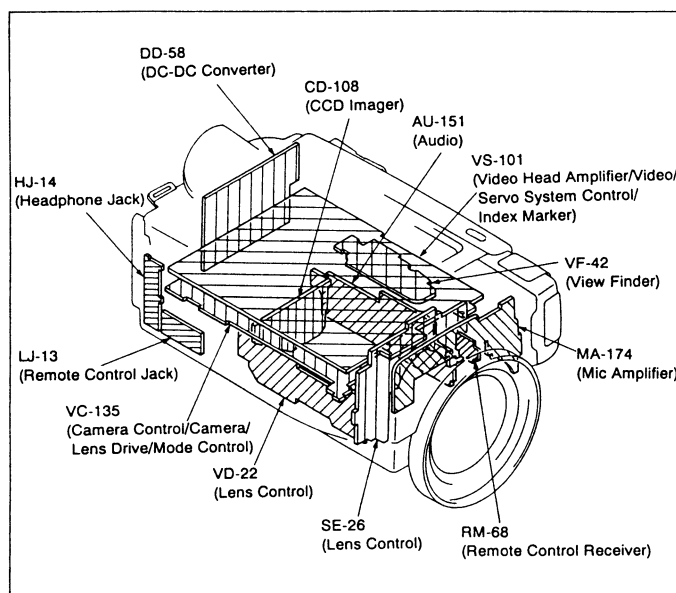
For printed wiring boards.

- RM-68 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

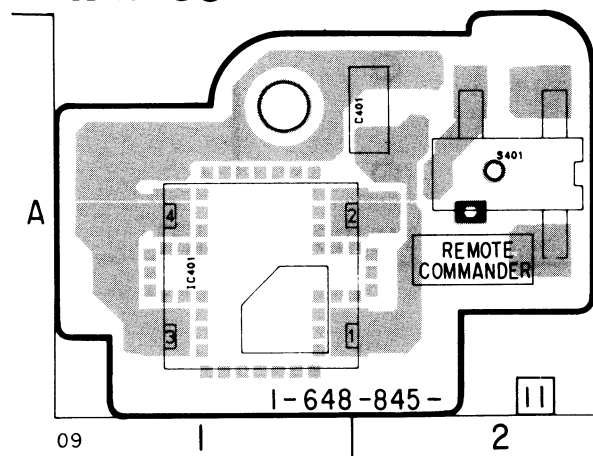
Caution:

Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.

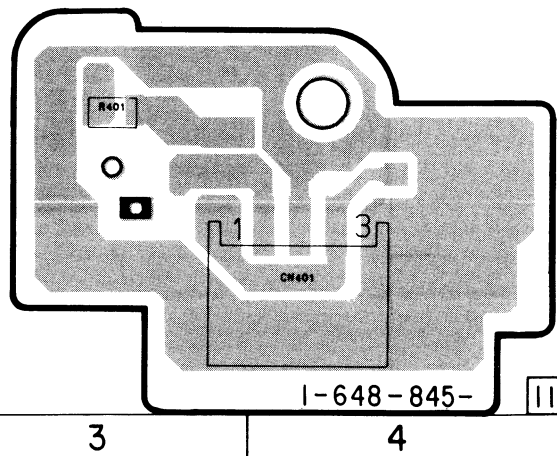
Parts face side: Parts on the parts face side seen from the parts face are indicated.



RM-68 BOARD (COMPONENT SIDE)



RM-68 BOARD (CONDUCTOR SIDE)



CCD-TR808E

LJ-13 (REMOTE CONTROL JACK) PRINTED WIRING BOARD

— Ref. No. LJ-13 BOARD: 5000 series —

- CF-4 board is replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.
- **For printed wiring boards.**
- LJ-13 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

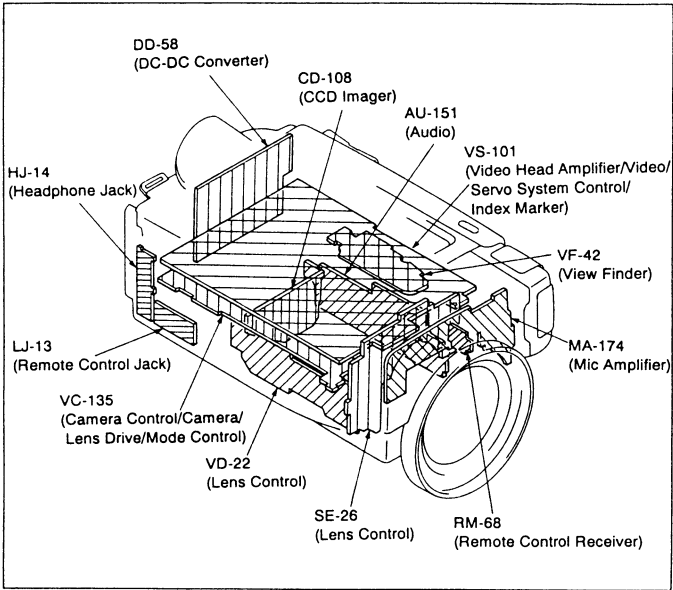
Caution:

Pattern face side:
(Conductor Side)

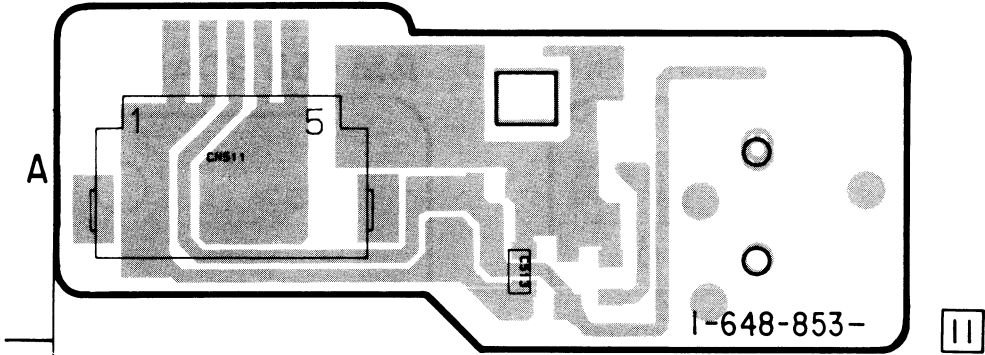
Parts on the pattern face side seen from the pattern face are indicated.

Parts face side:
(Component side)

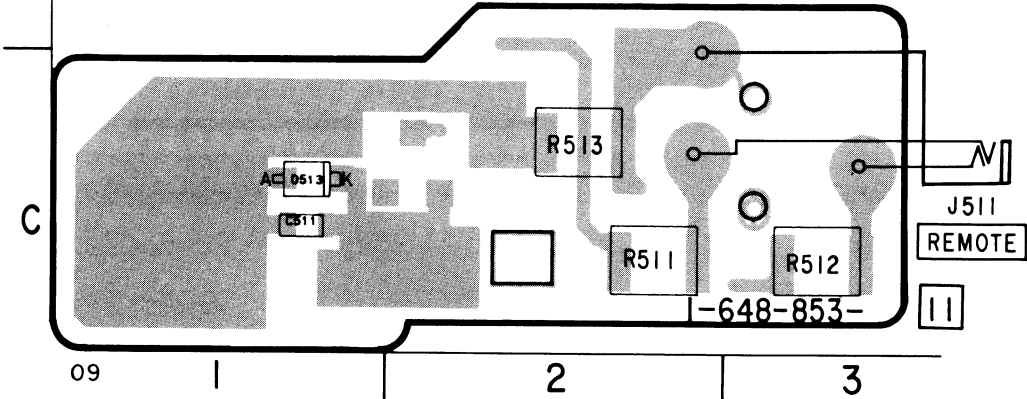
Parts on the parts face side seen from the parts face are indicated.



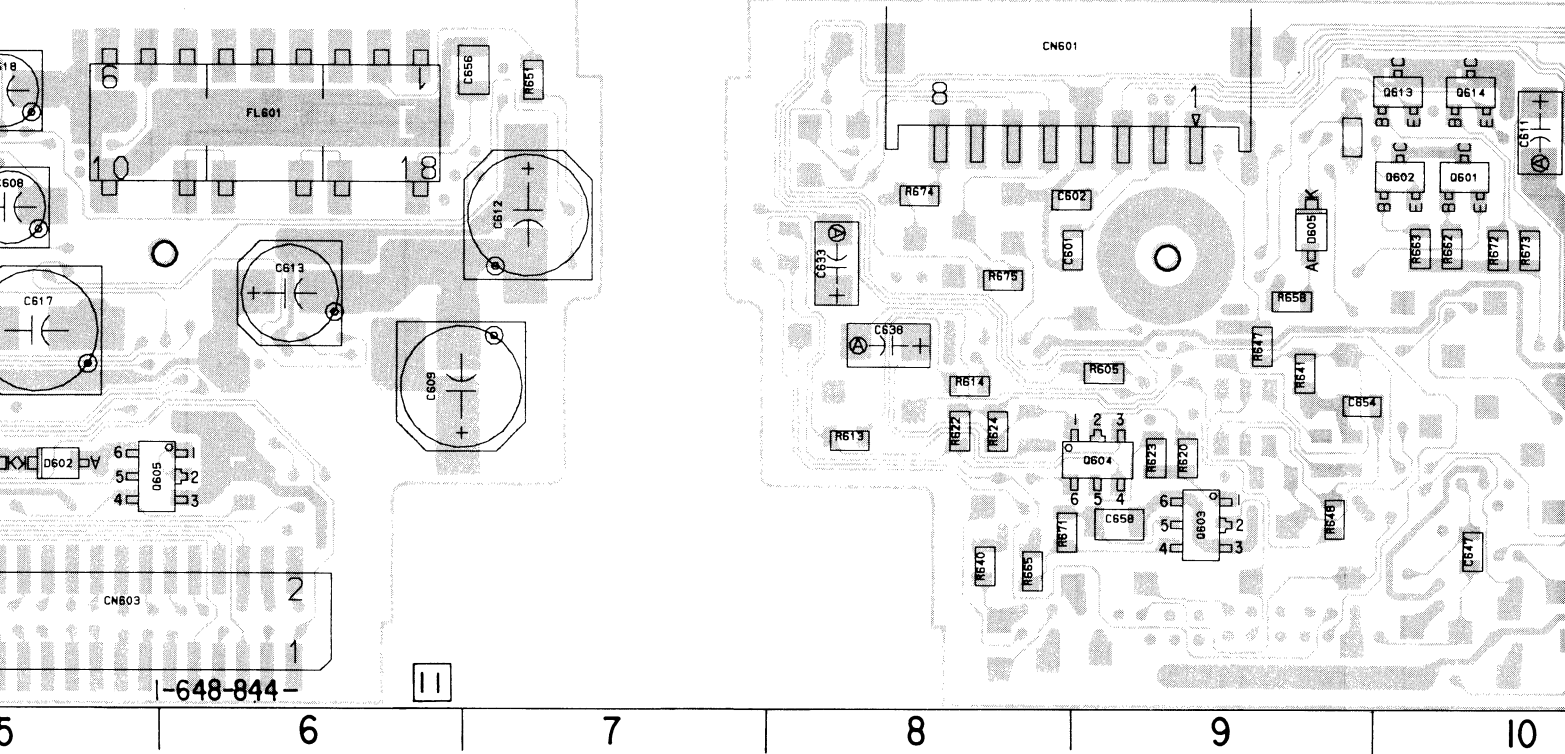
LJ-13 BOARD (COMPONENT SIDE)



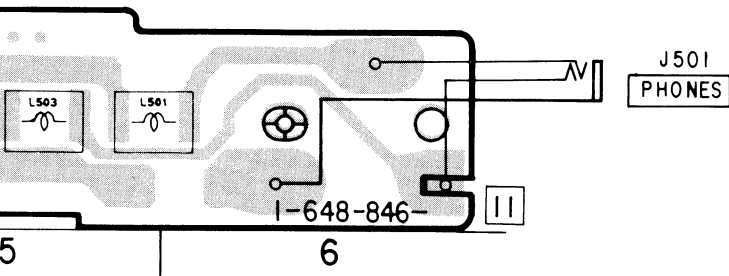
LJ-13 BOARD (CONDUCTOR SIDE)



AU-151BOARD (CONDUCTOR SIDE)



CONDUCTOR SIDE)



HJ-14
(Headphone)

LJ-13
(Remote Co)

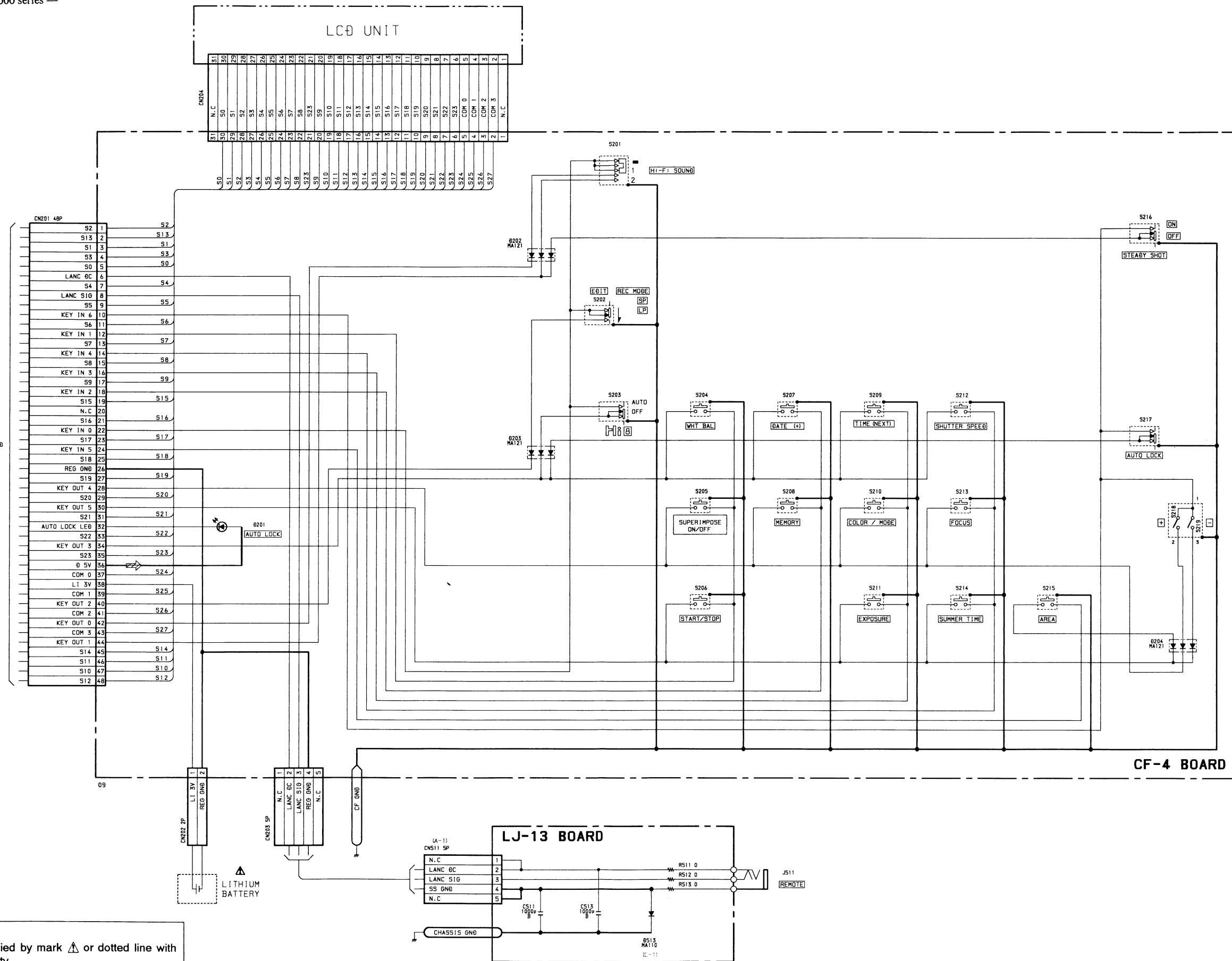
VC-13
(Cam
Lens

1 2 3 4 5 6 7 8 9 10 11 12 13 14

— Ref. No. LJ-13 BOARD: 5000 series —

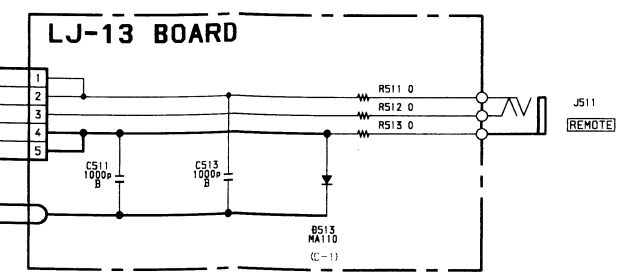
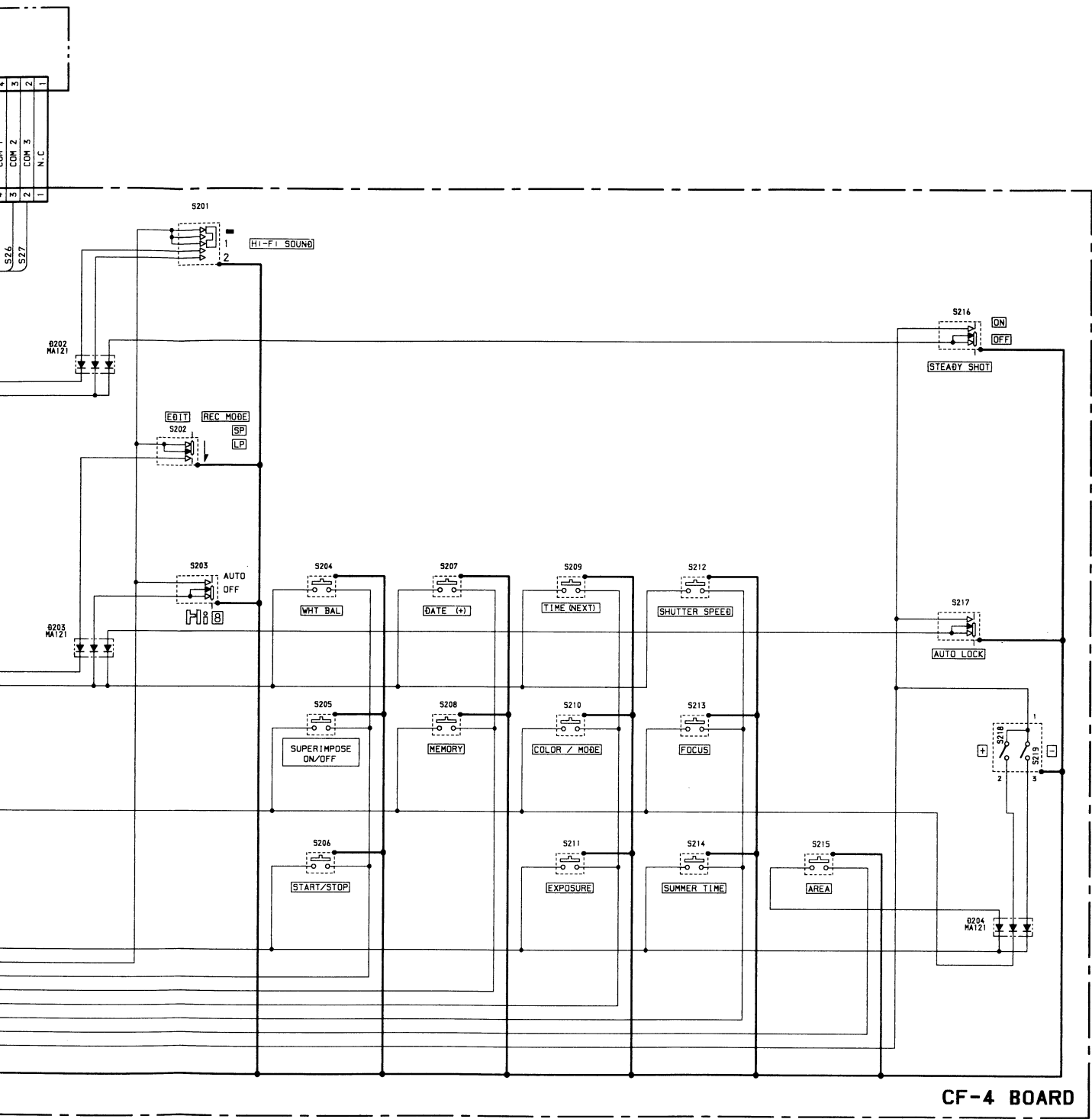
A
B
C
D
E
F
G
H
I
J

TO
VC-135 BOARD
(4/4)
CN922
(See Page 92)



Note:
The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

7	8	9	10	11	12	13	14
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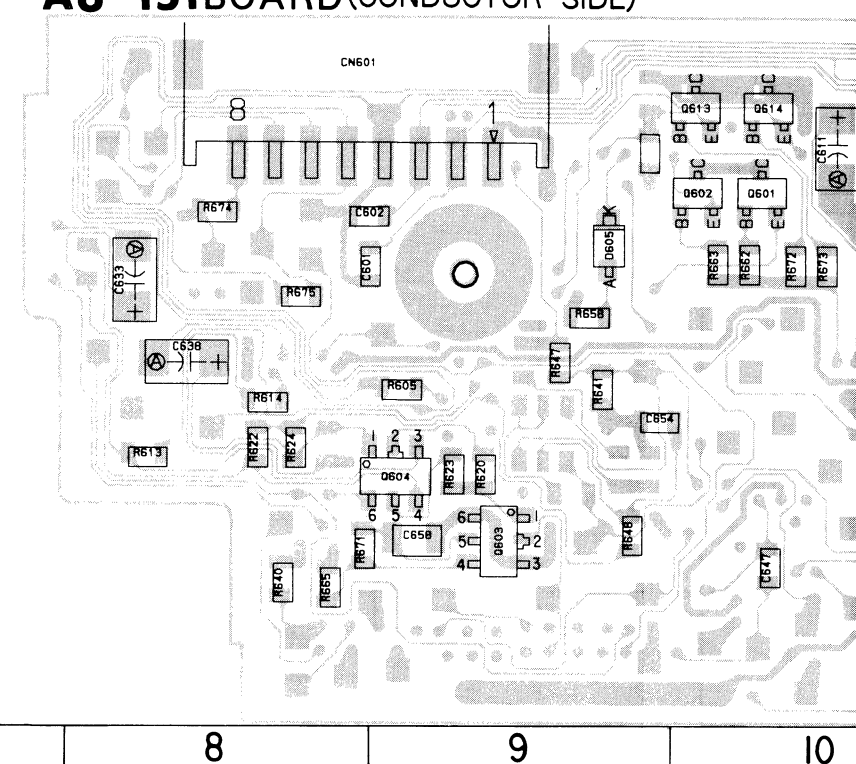
— 136 —

— 137 —

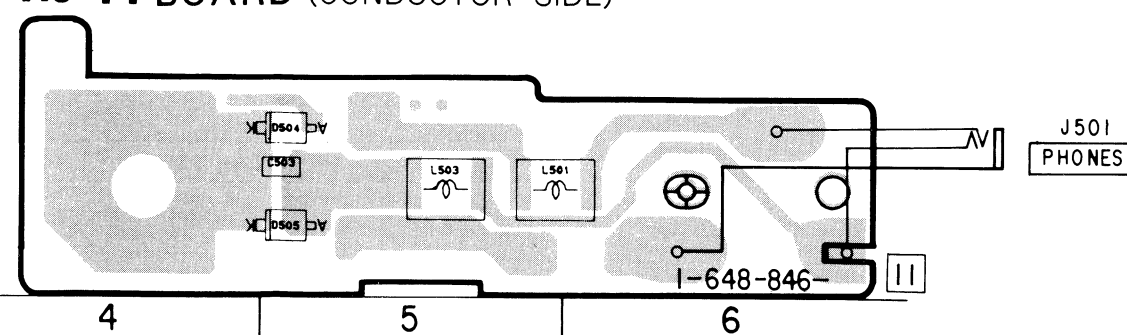
- HJ-14
(Headphone)
- LJ-13
(Remote Control)
- VC-1
(Camera Lens)

Parts face side: Parts on the parts face side seen from the
(Component side) parts face are indicated.

AU-151 BOARD (CONDUCTOR SIDE)

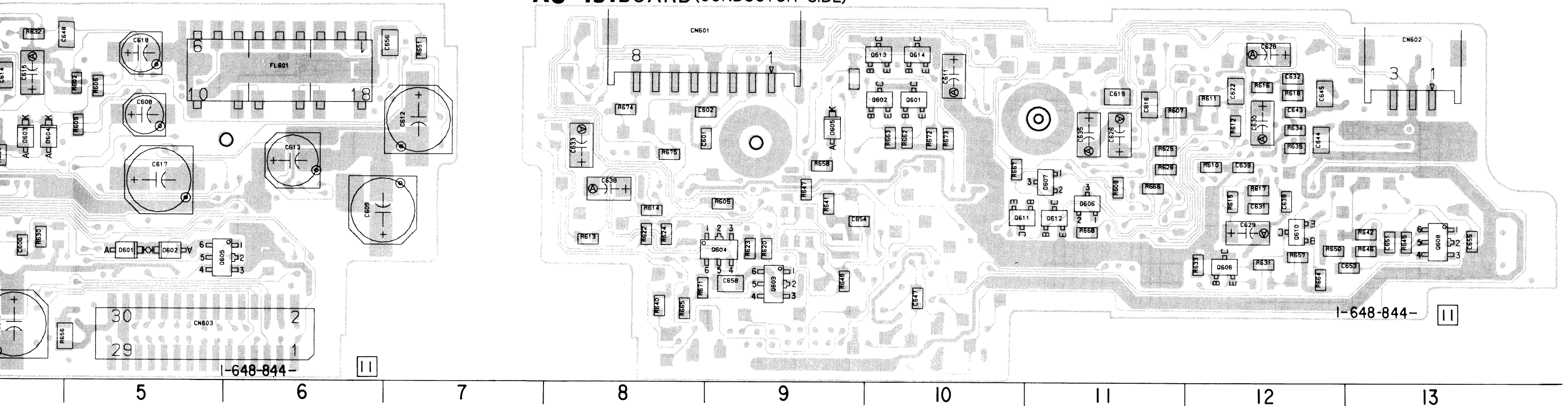


HJ-14 BOARD (CONDUCTOR SIDE)

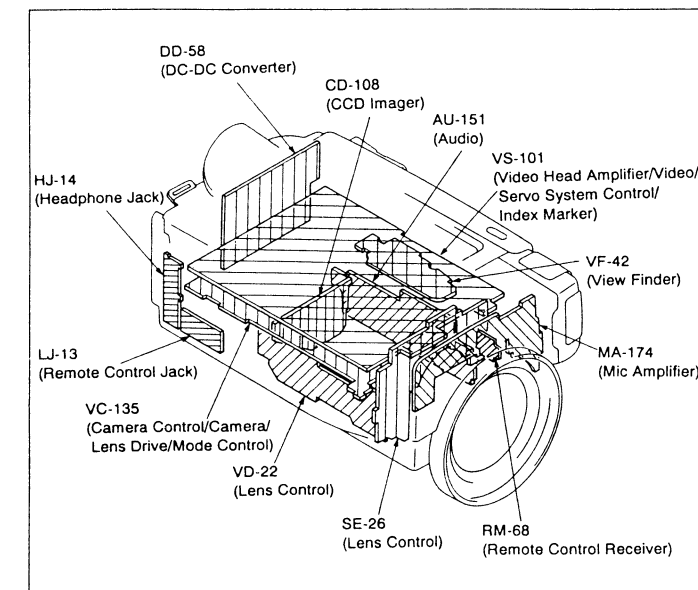
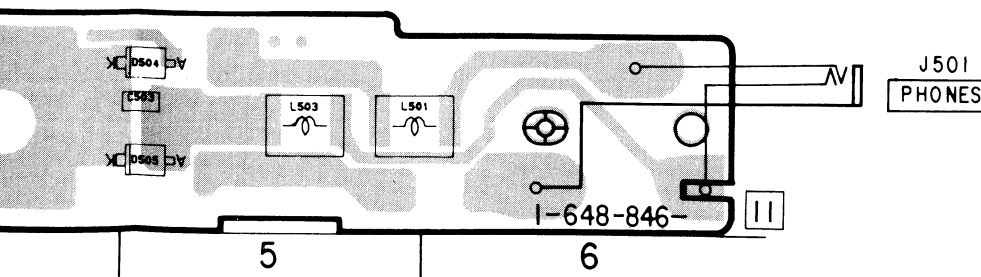


en from
from the

AU-151 BOARD (CONDUCTOR SIDE)

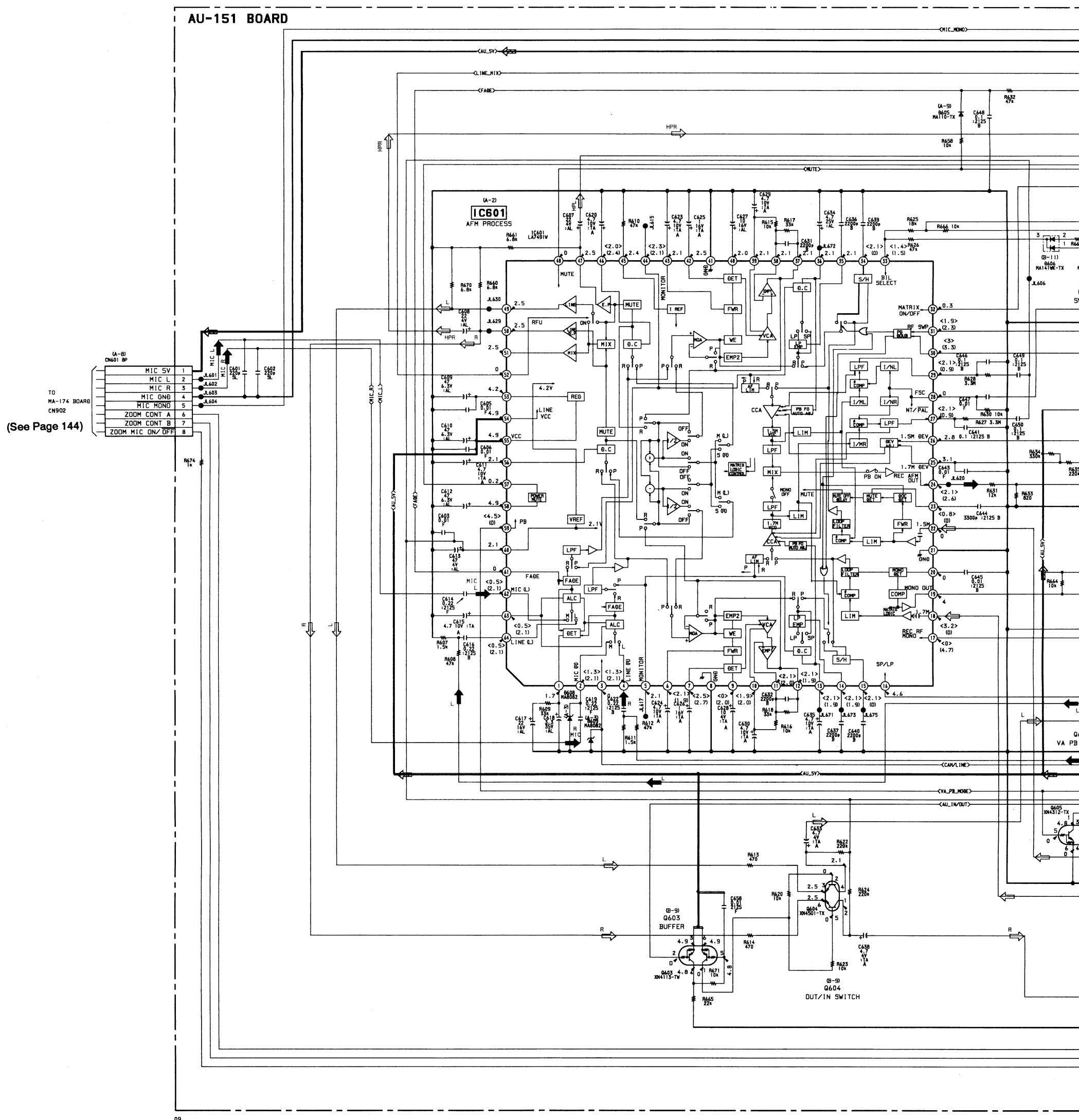


BOARD (CONDUCTOR SIDE)



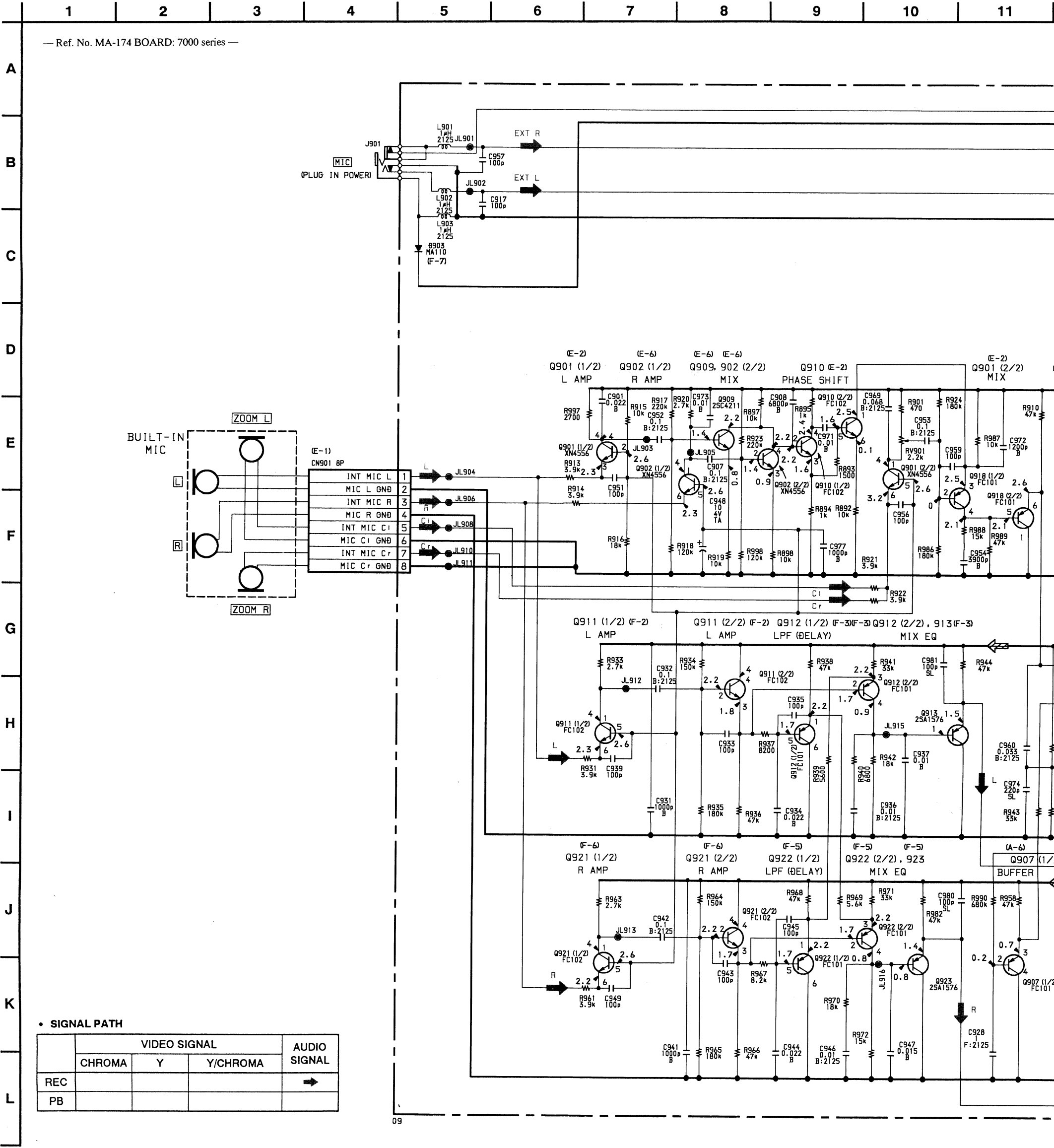
AU-151 (AUDIO), HJ-14 (HEADPHONE JACK) SCHEMATIC DIAGRAMS

— Ref. No. AU-151, HJ-14 BOARDS: 6000 series —

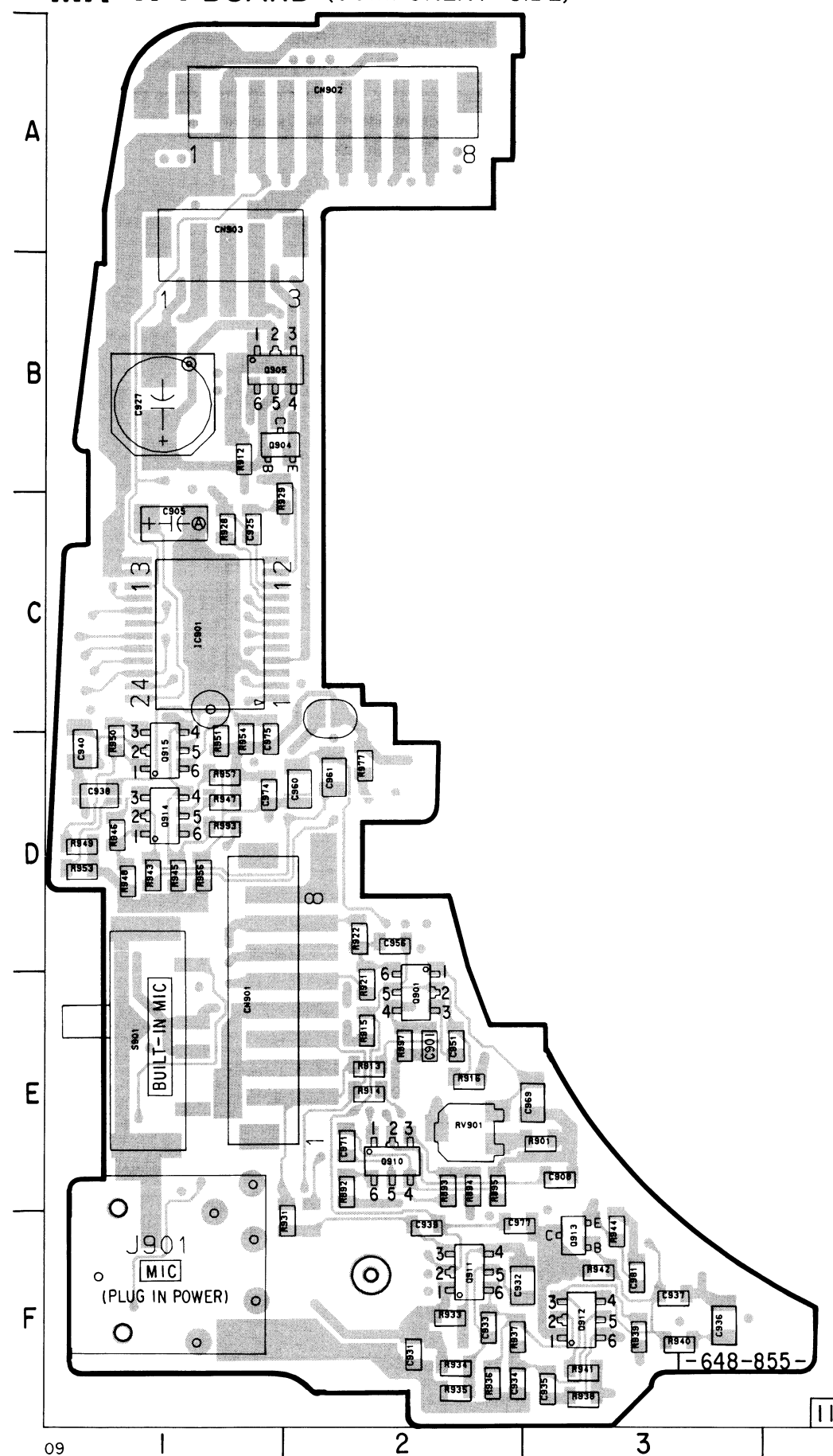


MA-174 (MIC AMPLIFIER) SCHEMATIC DIAGRAM

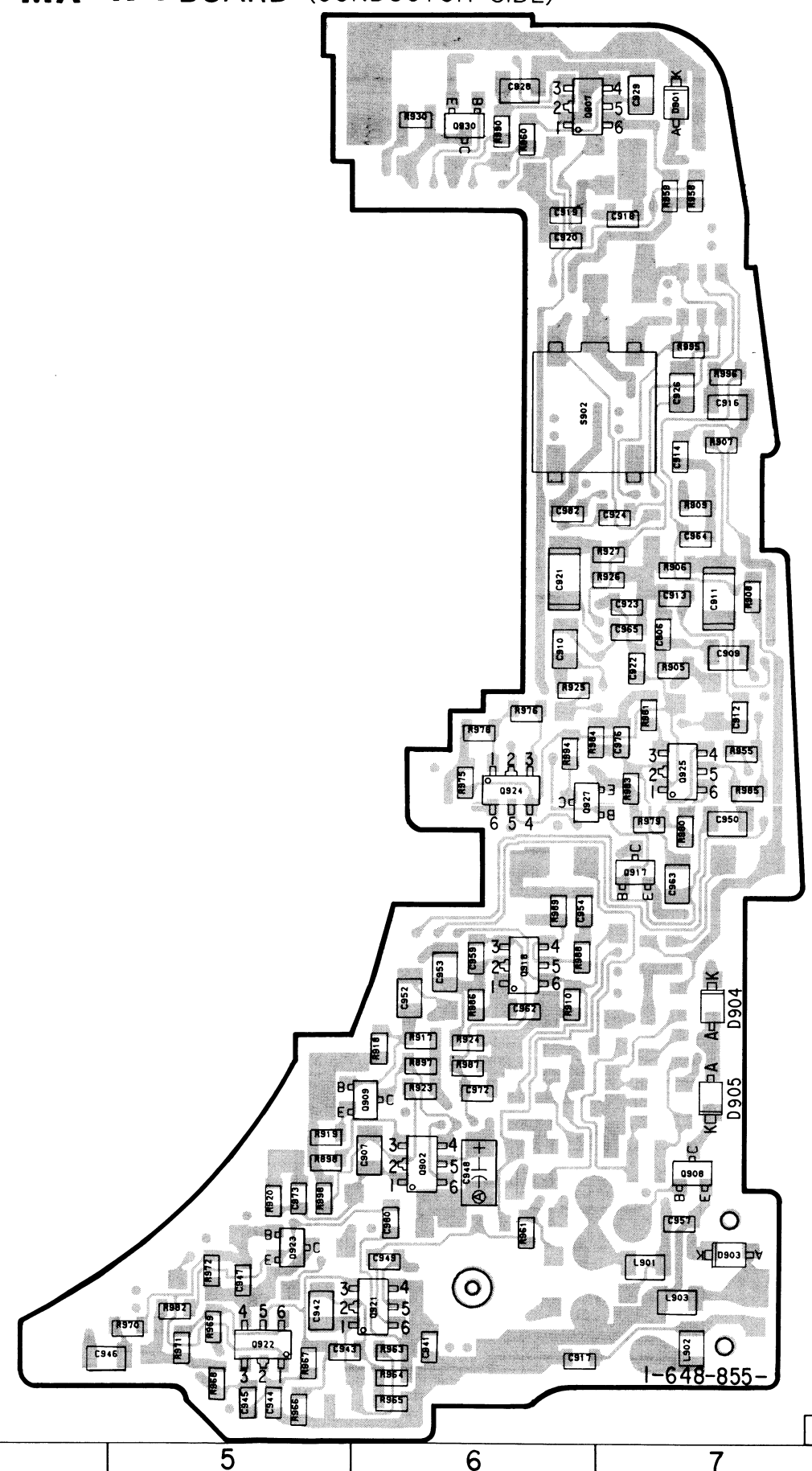
— Ref. No. MA-174 BOARD: 7000 series —



MA-174 BOARD (COMPONENT SIDE)



MA-174 BOARD (CONDUCTOR SIDE)

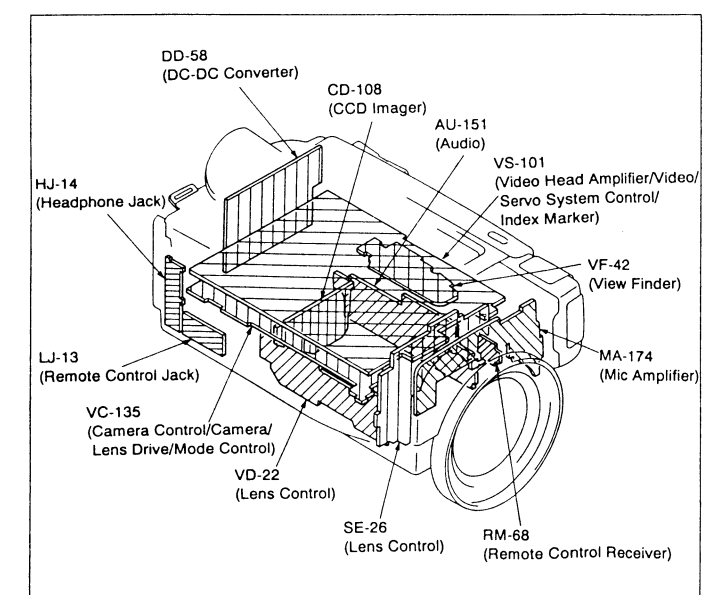


- For printed wiring boards.
- MA-174 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:

Pattern face side: Parts on the pattern face side seen from (Conductor Side) the pattern face are indicated.

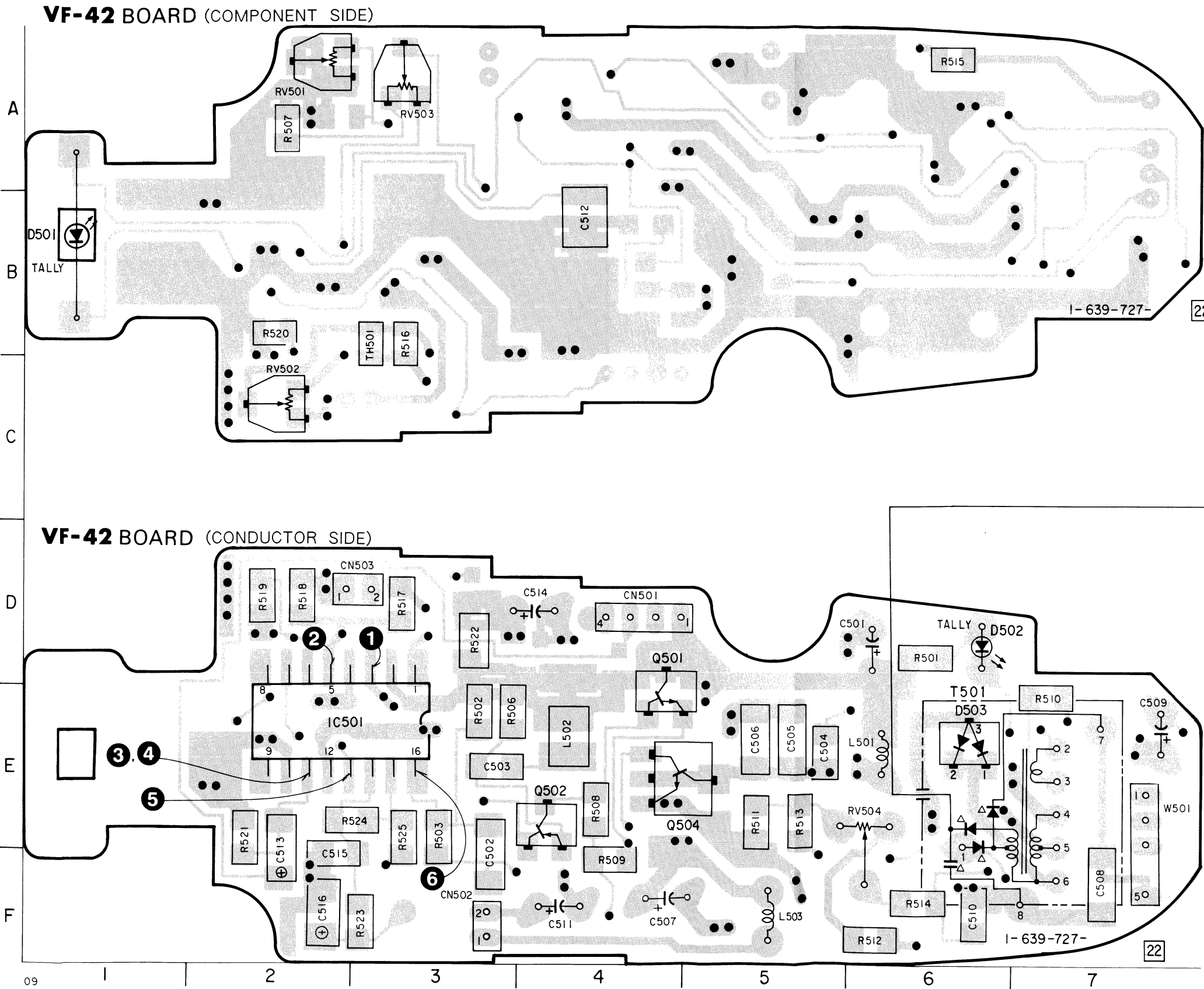
Parts face side: Parts on the parts face side seen from the (Component side) parts face are indicated.



CCD-TR808E

VF-42 (VIEW FINDER) PRINTED WIRING BOARD

— Ref. No. VF-42 BOARD: 8000 series —



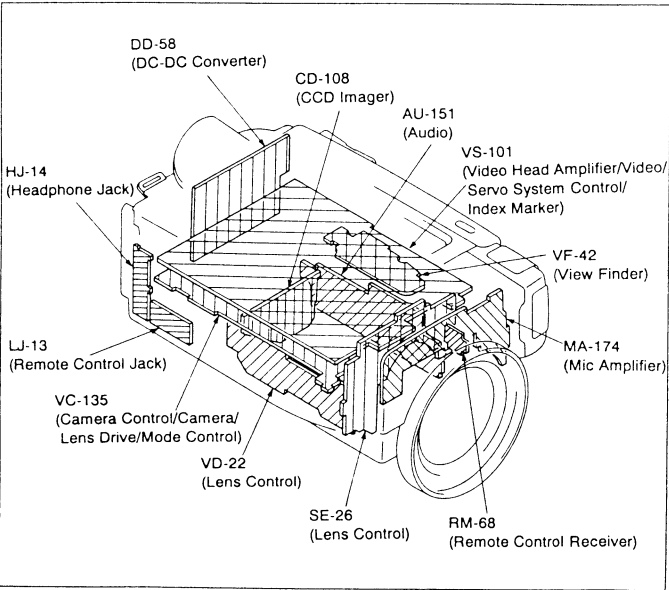
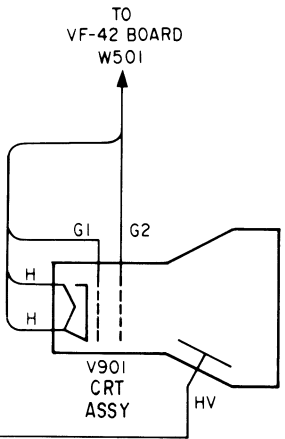
• For printed wiring boards.

Caution:

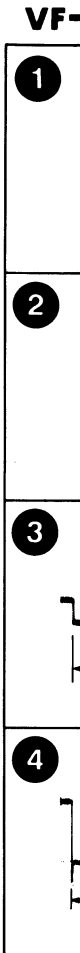
Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.

Parts face side: Parts on the parts face side seen from the (Component side) parts face are indicated.

• ● : Through hole.

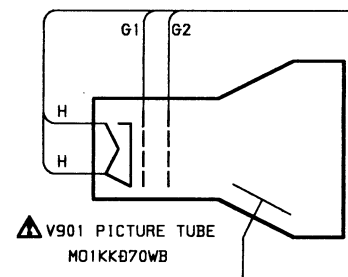
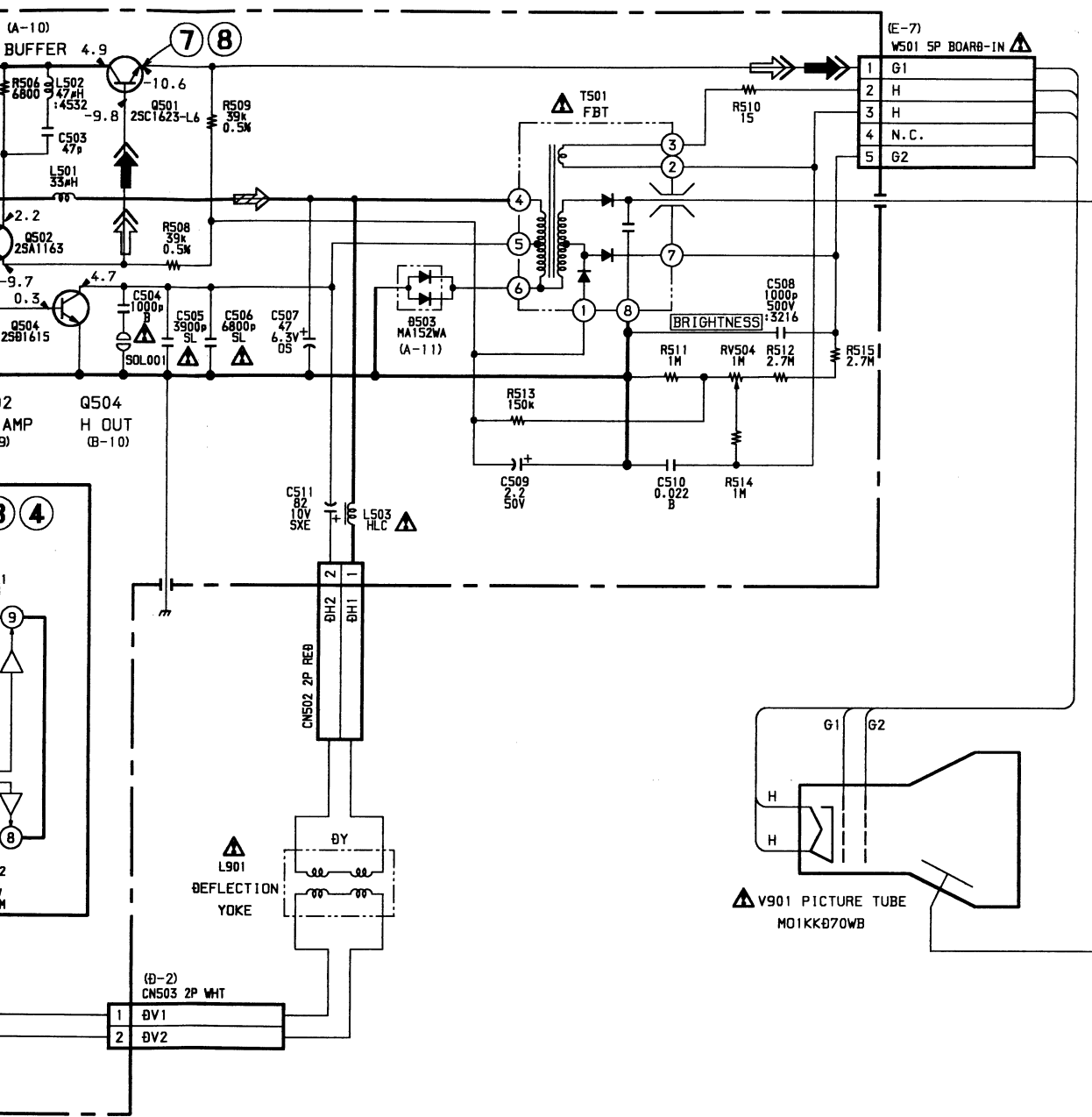


A —
B —
C —
D —
E —
F —
G —
H —
I —
J



- **SIGNAL PATH**

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡➡	
PB		➡➡	

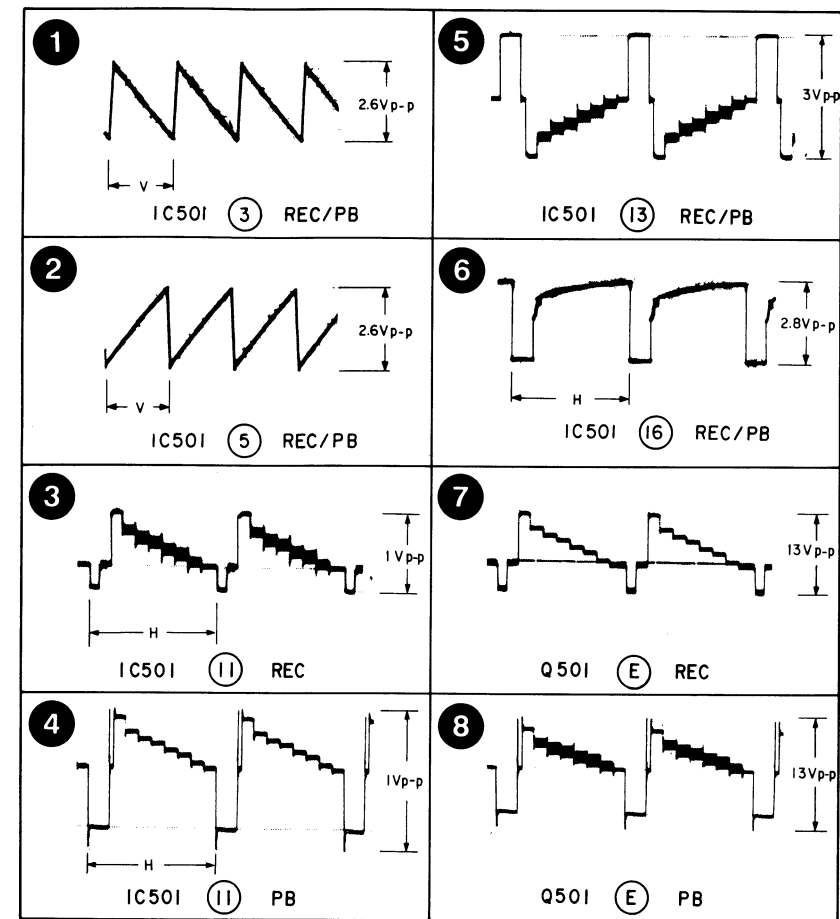


Note:
The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡	
PB		➡	

VF-42 BOARD



DD-58 (DC-DC CONVERTER) SCHEMATIC DIAGRAM

— Ref. No. DD-58 BOARD: 9000 series —

A

B

C

D

E

F

G

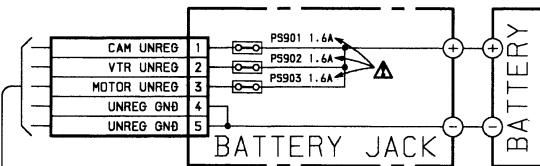
H

I

J

DD-58 BOARD Δ

no mark : REC/PB mode
() : REC mode
< > : PB mode



Note:
The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

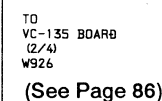
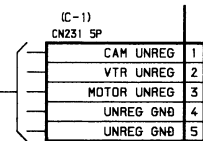
• SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)		▶▶	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)		▶▶▶	

09

Q235 (B-8)
SWITCHING

```
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
```



TO
VS-101 BOARD
(5/6)
W152

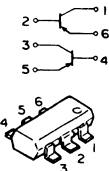
(See Page 119, 120)

4-3. SEMICONDUCTORS

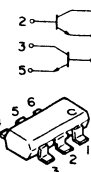
DTA114EU
DTA144EK
DTA144EU
DTA144WU
DTC114EU
DTC114TU
DTC144EU
DTC144WU
MSA1586-BC
MSC4116-BC
UN5113
UN5213
2SA1162
2SA1163-G
2SA1576-R
2SA1586-YG
2SA1611-M5M6
2SA1838
2SB1218A-QRS
2SB1295-UL5
2SC1623-L5L6
2SC3931-C
2SC4116-YG
2SC4178-F14
2SC4211-5.6.7
2SC4400-3/4/5
2SC4555-5.6.7
2SC4851
2SC4998



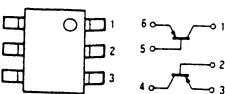
FC101



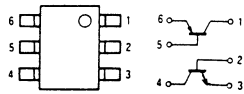
FC102
XN6213



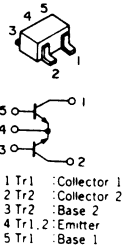
FC149
XN4401



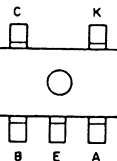
FC150



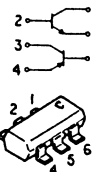
FMG2
FMW1



FP101
FP102



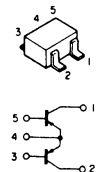
IMD2
XN4312
XN4601



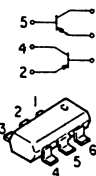
UMH2
XN4113
XN4213
XN4501
XN4556



XN1113



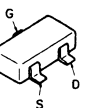
XN6401



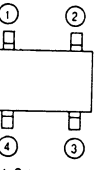
2SB1115A
2SB1122-S
2SD1615A-GP



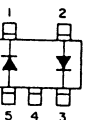
2SK1875-BL/V



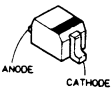
3SK248



FC806



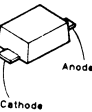
MA110
1SS355



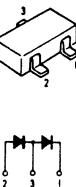
MA141WK
MA152WA
1SS181



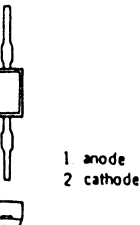
MA728
MA8082-M



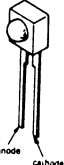
1SS226



TLS221



BR4371F



SECTION 5
EXPLODED VIEWS

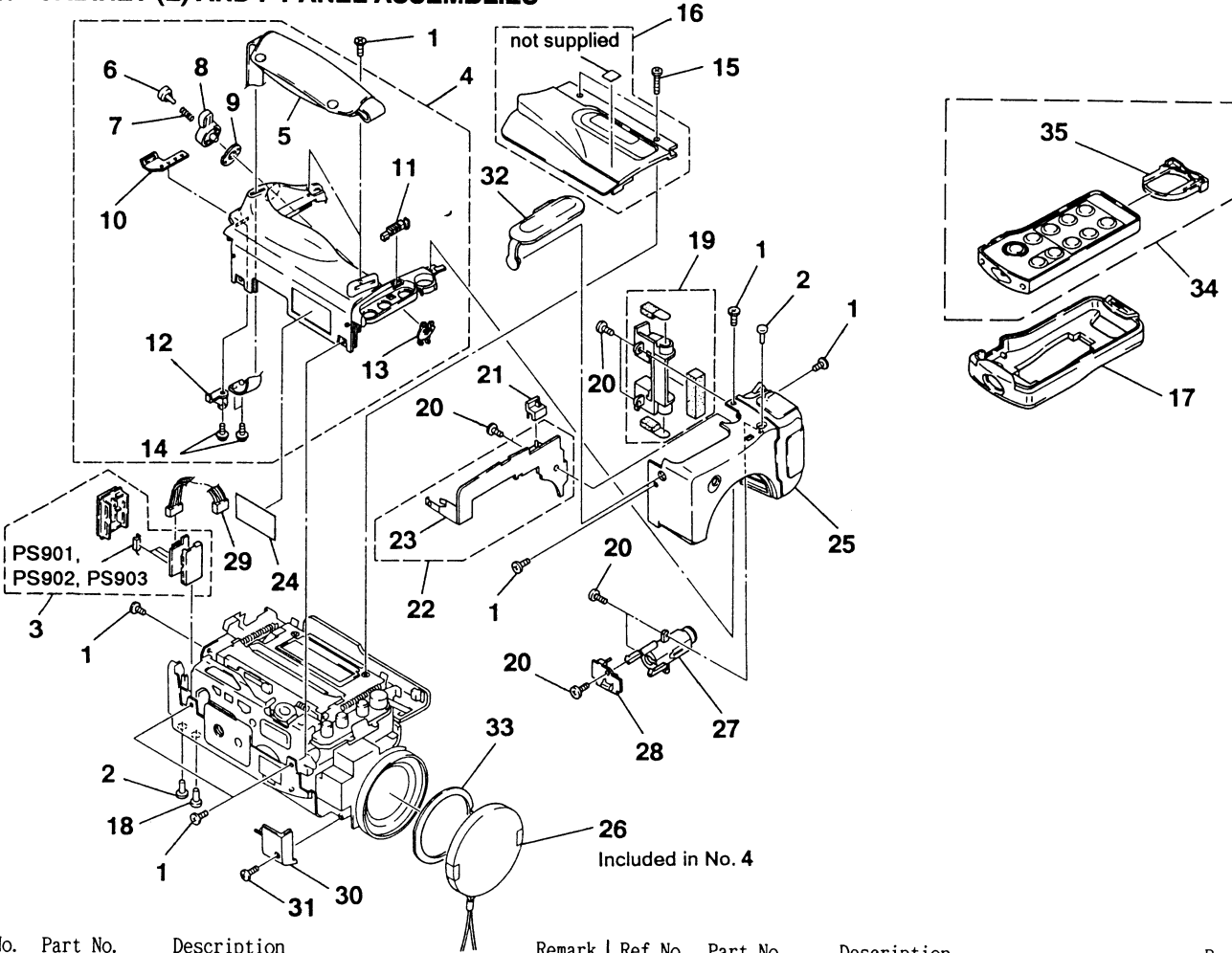
NOTE:

- XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

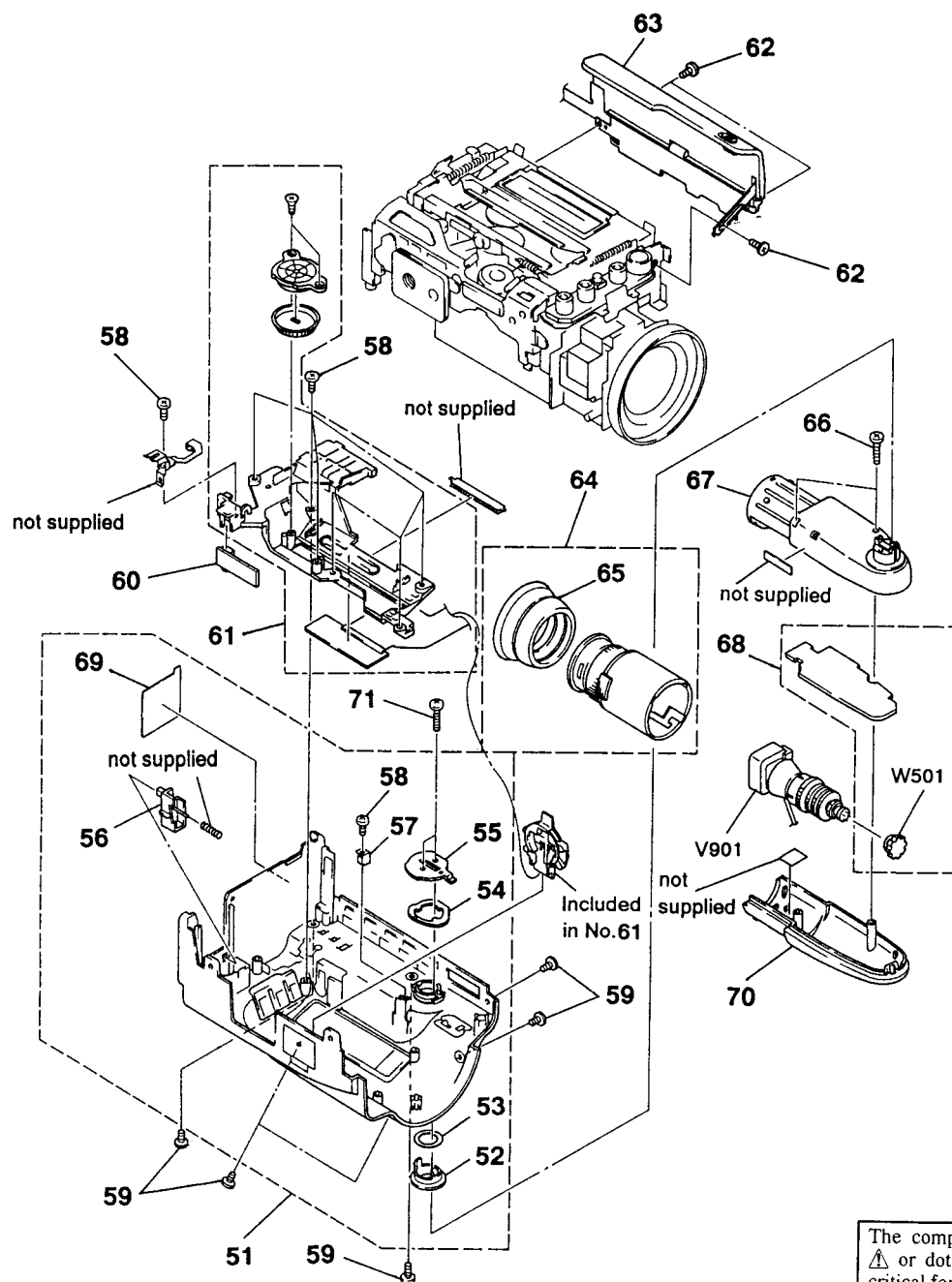
The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

5-1. CABINET (L) AND F PANEL ASSEMBLIES



Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
1	3-719-381-01	SCREW (M2X4)		21	3-946-477-01	BUTTON, MICROPHONE	
2	3-728-267-01	COVER, 3.5 JACK (MIC, PHONES)		* 22	A-7063-665-A	MA-174P BOARD, COMPLETE	
3	1-537-297-31	TERMINAL BOARD, BATTERY		23	3-947-195-01	PLATE, GROUND, MC	
4	A-7082-467-A	CABINET (L) BLOCK ASSY		* 24	3-954-588-01	LABEL, MODEL NUMBER (AEP)	
5	3-736-807-01	BELT, GRIP		25	X-3943-067-1	PANEL ASSY, F	
6	3-942-950-01	BUTTON, S/S		26	X-3941-358-1	CAP ASSY, LENS	
7	3-578-221-00	SPRING, COMPRESSION		27	X-3941-494-1	CATCHER ASSY (F), RAY	
8	3-942-985-01	KNOB, STAND-BY		* 28	A-7071-880-A	RM-68P BOARD, COMPLETE	
9	3-736-364-01	SPRING		29	1-944-055-11	HARNES (CD-26)	
10	3-736-338-01	BRACKET, BELT		* 30	X-3941-616-1	COVER ASSY, LOWER, VA	
11	3-749-704-01	LID, IN OUT		31	3-947-677-01	SCREW (1.7X4), TAPPING (B)	
12	3-736-360-01	JOINT, LR		32	3-953-695-11	COVER, JACK	
13	3-942-953-01	HOLDER, STAND-BY KNOB		* 33	3-946-907-01	SHEET, NAME RING	
14	3-669-480-11	+ PTPWH 2		34	1-466-801-11	REMOTE CONTROLLER (CAM CODER) (RMT-508)	
15	3-727-902-61	SCREW (M1.4X5), SPECIAL		35	3-708-412-01	LID, BATTERY CASE, LITHIUM	
16	X-3943-065-1	LID ASSY, CASSETTE			PS901	1-532-841-21	LINK, IC
17	3-947-664-11	HOLDER (B), REMOTE CONTROL			PS902	1-532-841-21	LINK, IC
18	3-728-266-01	COVER, 2.5 JACK (REMOTE)			PS903	1-532-841-21	LINK, IC
19	1-542-180-11	MICROPHONE ASSY					
20	3-719-408-01	SCREW (B2), TAPPING, P3					

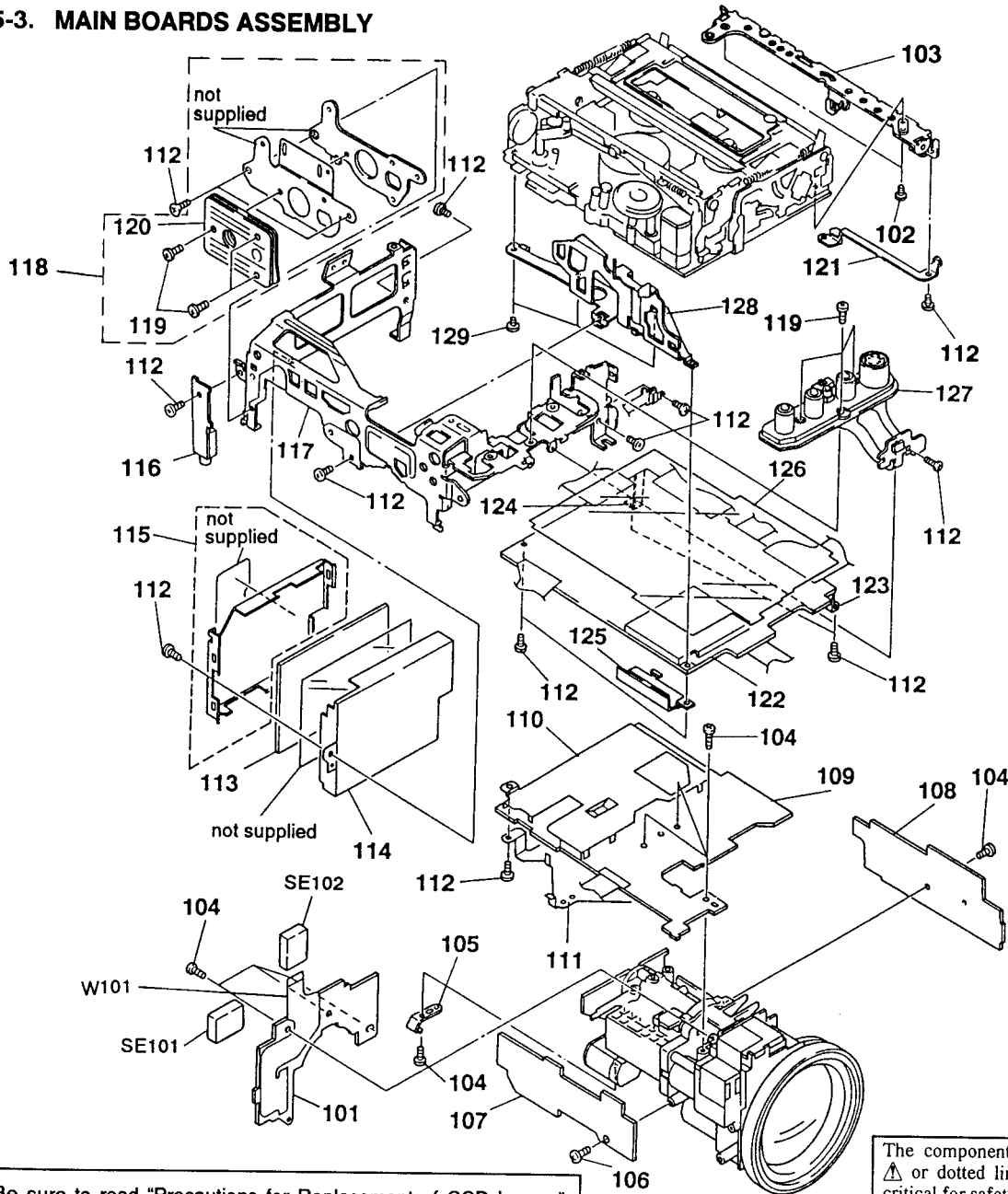
5-2. CABINET (R) ASSEMBLY



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	X-3943-066-1	CABINET (R) ASSY		63	1-466-800-11	SWITCH BLOCK, CONTROL (FK-4)	
52	3-747-109-01	SLEEVE, EVF		64	X-3941-603-1	HOLDER ASSY, FINDER	
53	3-747-112-01	RING, TILT		65	3-946-426-01	EYE CUP	
54	3-747-110-01	SPRING, LEAF, TILT		66	3-713-790-31	SCREW (M2X8), TAPPING, P3	
55	3-747-111-01	PLATE, LOCK, TILT		67	X-3940-706-1	CABINET (L) ASSY, EVF	
56	3-747-164-01	LEVER, RELEASE		* 68	A-7063-220-A	VF-42P BOARD, COMPLETE	
57	3-747-178-01	REINFORCEMENT, TILT LOCK		* 69	3-945-964-01	LABEL (U), BATTERY FITTING	
58	3-719-601-01	SCREW (B2X5), TAPPING		70	3-943-077-01	CABINET (R), EVF	
59	3-719-381-01	SCREW (M2X4)		71	3-740-546-41	SCREW (M2X10)	
* 60	A-7071-879-A	LJ-13P BOARD, COMPLETE		⚠ V901	1-452-565-11	CRT ASSY (M01KKD70WB)	
61	1-466-689-21	SWITCH BLOCK, CONTROL (CF-4)		⚠ W501	1-540-019-21	SOCKET ASSY, CRT	
62	3-713-786-51	SCREW (M2X3)					

5-3. MAIN BOARDS ASSEMBLY



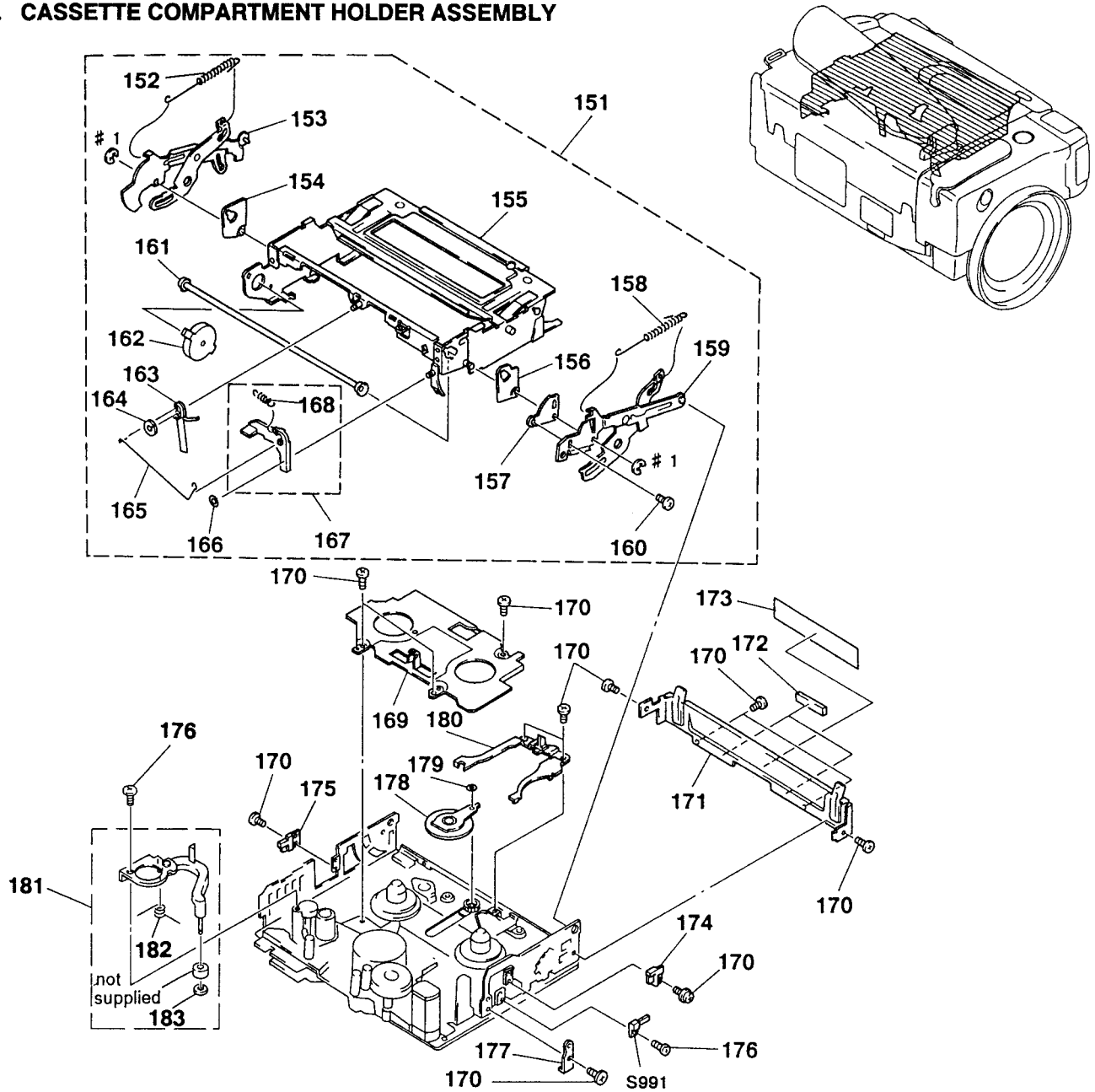
Be sure to read "Precautions for Replacement of CCD Imager" on page 95 when changing the CCD imager.

The components identified by mark $\triangle$ or dotted line with mark $\triangle$ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description	Remark
* 101	A-7063-663-A	SE-26P BOARD, COMPLETE	
102	3-703-816-41	SCREW (M1.4X2.5), SPECIAL HEAD	
103	3-946-459-01	FRAME (UPPER)	
104	3-719-601-01	SCREW (B2X5), TAPPING	
105	3-946-471-01	BRACKET, LENS	
106	3-947-491-01	SCREW (B) (2X4), TAPPING	
* 107	A-7063-664-A	VD-22P BOARD, COMPLETE	
* 108	A-7063-662-A	AU-151 BOARD, COMPLETE	
* 109	A-7063-661-A	VC-135 BOARD, COMPLETE	
* 110	3-946-451-01	CASE (LOWER), SHIELD, VC	
111	3-947-675-01	HEAT SINK, VC	
112	3-713-786-51	SCREW (M2X3)	
* $\triangle$ 113	A-7063-659-A	DD-58 BOARD, COMPLETE (DC-DC CONVERTER UNIT)	
114	3-946-454-01	CASE(MAIN), SHIELD, DD CONVERTER	
115	X-3941-749-1	DD CONVERTER (LID) ASSY	

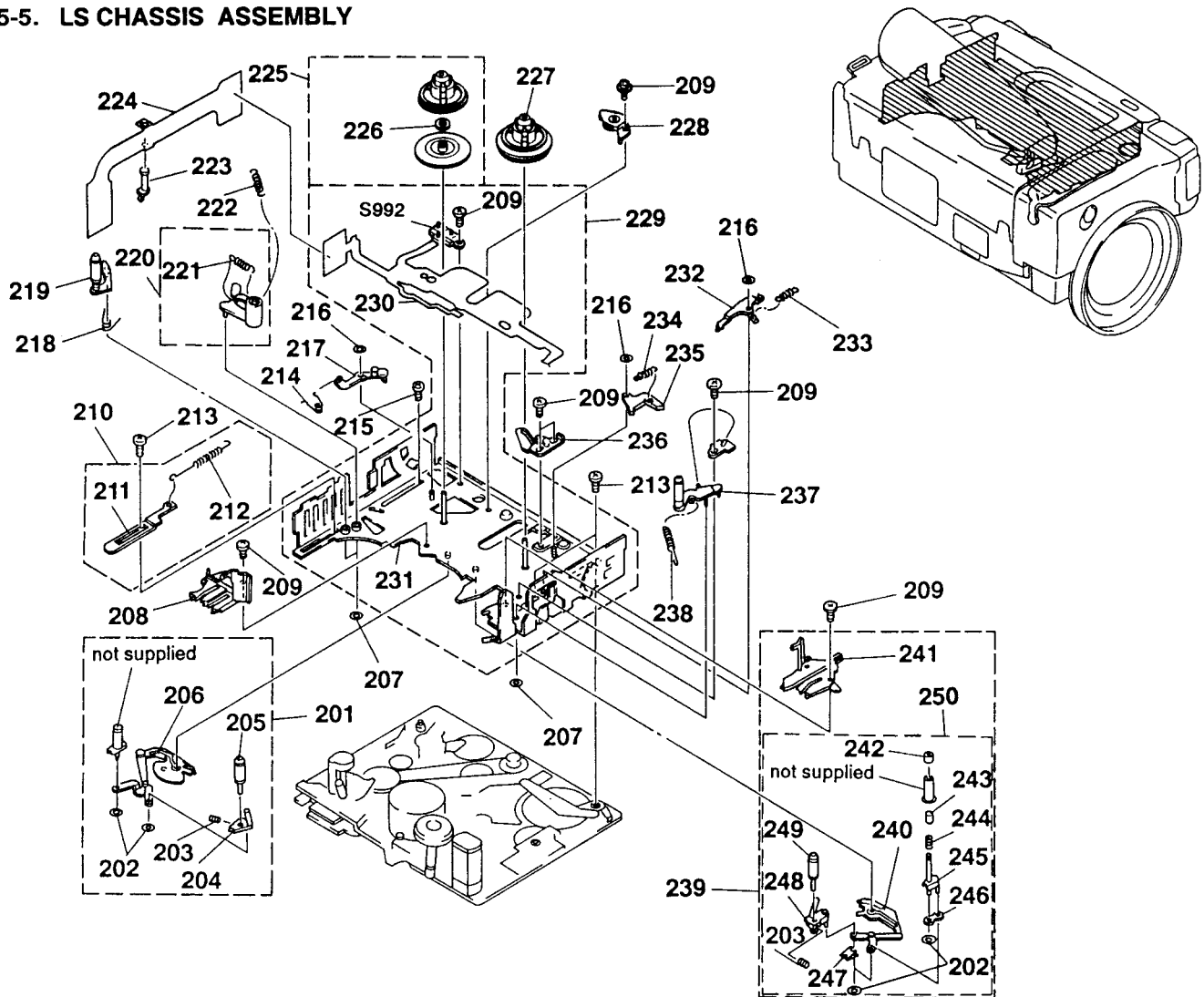
Ref.No.	Part No.	Description	Remark
* 116	A-7071-878-A	HJ-14P BOARD, COMPLETE	
117	X-3941-343-1	FRAME ASSY, MD	
118	X-3941-345-1	FRAME ASSY, TRIPOD	
119	3-719-381-01	SCREW (M2X4)	
120	3-736-396-51	SCREW, TRIPOD	
121	3-946-461-01	REINFORCEMENT, VF	
* 122	A-7063-660-A	VS-101 BOARD, COMPLETE	
* 123	3-946-456-01	PLATE (L), GROUND, VS	
* 124	3-942-939-01	PLATE (R), GROUND, VS	
* 125	3-942-936-01	SHIELD, RP CONNECTOR	
126	3-946-457-01	SHEET, HEAT INSULATING, VS	
127	1-537-407-21	TERMINAL BOARD (JACK BOARD)	
128	X-3941-344-1	FRAME (LOWER) ASSY	
SE101	1-810-024-11	SENSOR, ANGULAR VELOCITY (YS)	
SE102	1-810-024-21	SENSOR, ANGULAR VELOCITY (PS)	
W101	1-642-239-11	FP-486 FLEXIBLE BOARD	

5-4. CASSETTE COMPARTMENT HOLDER ASSEMBLY



Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
151	A-7040-256-A	HOLDER BLOCK ASSY (4)		168	3-509-127-00	SPRING, TENSION	
152	3-739-872-01	SPRING, TENSION		169	3-951-964-01	BASE, LED	
153	X-3940-718-1	ARM (T) ASSY (4), F		170	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
154	3-728-145-01	BEARING (T), MIDWAY GEAR		171	3-943-055-01	FRAME (L), LS	
155	X-3940-719-1	HOLDER ASSY (4)		* 172	3-736-841-02	SPACER, FK	
156	3-728-146-01	BEARING (S), MIDWAY GEAR		173	3-943-701-01	LABEL, CAUTION	
157	3-739-808-01	PLATE (2), ADJUSTMENT, C ARM		174	3-727-957-01	HOLDER (S), SENSOR	
158	3-739-873-01	SPRING, TENSION		175	3-727-954-01	HOLDER (T), SENSOR	
159	X-3940-717-1	ARM (S) ASSY (4), F		176	3-728-148-11	SCREW (M1.4X2.5), SPECIAL HEAD	
160	3-728-126-01	SCREW (M1.4X2), SPECIAL HEAD		177	3-727-946-01	SUPPORT, LS	
161	X-3727-920-1	GEAR ASSY, MIDWAY		178	X-3727-926-1	ARM ASSY, GEAR	
162	X-3739-809-1	DAMPER ASSY (2)		179	3-315-414-31	WASHER	
163	X-3940-991-1	PROTECTOR ASSY (2), T		180	X-3940-087-1	BASE ASSY, RL	
164	3-749-304-01	WASHER, STOPPER		181	A-7040-264-D	ROLLER BLOCK ASSY, HC	
165	3-728-277-01	BAR, JOINT		182	3-943-439-02	SPRING, TORSION	
166	3-331-007-11	WASHER		183	3-321-393-11	WASHER, STOPPER	
167	A-7040-164-A	ARM BLOCK ASSY, TP		S991	1-572-611-11	SWITCH, LEAF (C LOCK)	

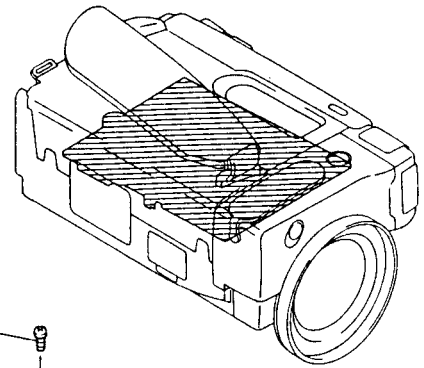
5-5. LS CHASSIS ASSEMBLY



Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
201	A-7040-148-A	ARM (T) BLOCK ASSY, GUIDE		227	X-3727-952-1	TABLE ASSY, REEL, SUPPLY	
202	3-331-007-11	WASHER		228	X-3727-914-4	CLUTCH ASSY, ONEWAY	
203	3-728-290-01	SCREW (M1. 2)		229	A-7010-365-A	MD ASSY (1)	
204	X-3727-947-1	BASE ASSY, TG7		230	A-7062-792-A	FP-423 BLOCK ASSY	
205	X-3727-994-1	ROLLER ASSY, TG8		231	X-3940-186-1	CHASSIS ASSY (S), LS	
206	X-3727-940-1	ARM (T) ASSY, GUIDE		232	3-732-077-01	RATCHET (JD), S	
207	3-315-414-31	WASHER		233	3-732-076-02	SPRING (JD), TENSION	
208	3-728-244-01	RAIL (T), GUIDE		234	3-732-078-02	SPRING (JD), TENSION	
209	3-728-103-11	SCREW (M1. 4X1. 6), SPECIAL HEAD		235	3-732-079-01	ARM (JD), S SOFT	
210	A-7040-150-A	SLIDER BLOCK ASSY, CAM		236	3-728-206-01	PLATE, CAM, LS	
211	3-728-089-01	SLIDER, CAM		237	X-3749-001-1	ARM ASSY (JD), TG1	
212	3-727-936-01	SPRING, TENSION		238	3-940-616-03	SPRING (JD), TENSION	
213	3-941-601-01	SCREW (M1. 4X2. 5), SPECIAL HEAD		239	A-7040-263-A	RAIL(S) BLOCK ASSY (3) (JD), GUIDE	
214	3-732-068-01	SPRING (JD), RATCHET		240	X-3727-941-1	ARM (S) ASSY, GUIDE	
215	3-732-085-01	SCREW (1. 2X1. 6), SPECIAL HEAD		241	3-728-226-01	RAIL (S) (JD), GUIDE	
216	3-728-091-01	WASHER, STOPPER		242	3-943-822-01	FLANGE (P), TG4 UPPER	
217	X-3728-005-1	RATCHET ASSY (JD), T		243	3-728-048-01	SLEEVE, TG4	
218	3-727-939-01	SPRING (JD), TORSION		244	3-728-023-01	SPRING, COMPRESSION	
219	A-7040-151-A	ARM BLOCK ASSY, TG11		245	X-3727-936-2	BASE ASSY, TG4	
220	A-7040-240-A	ARM BLOCK ASSY (JD), PINCH		246	3-728-053-01	PLATE, UNDER, TG4	
221	3-727-927-01	SPRING (POWER TENSION), TENSION		247	3-728-062-01	SPRING (6GB), LEAF	
222	3-732-089-03	SPRING (JD), TENSION		248	X-3727-948-1	BASE ASSY, TG6	
223	3-739-807-01	SHAFT (2), FLEXIBLE ROTARY		249	X-3940-733-1	ROLLER ASSY (3), TG5	
224	1-639-334-11	FP-422 FLEXIBLE BOARD		250	A-7040-262-C	ARM (S) BLOCK ASSY (3), GUIDE	
225	X-3727-951-2	TABLE ASSY, REEL, TAKE-UP		S992	1-572-802-12	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, Hi-8 MP)	
226	3-701-439-11	WASHER					

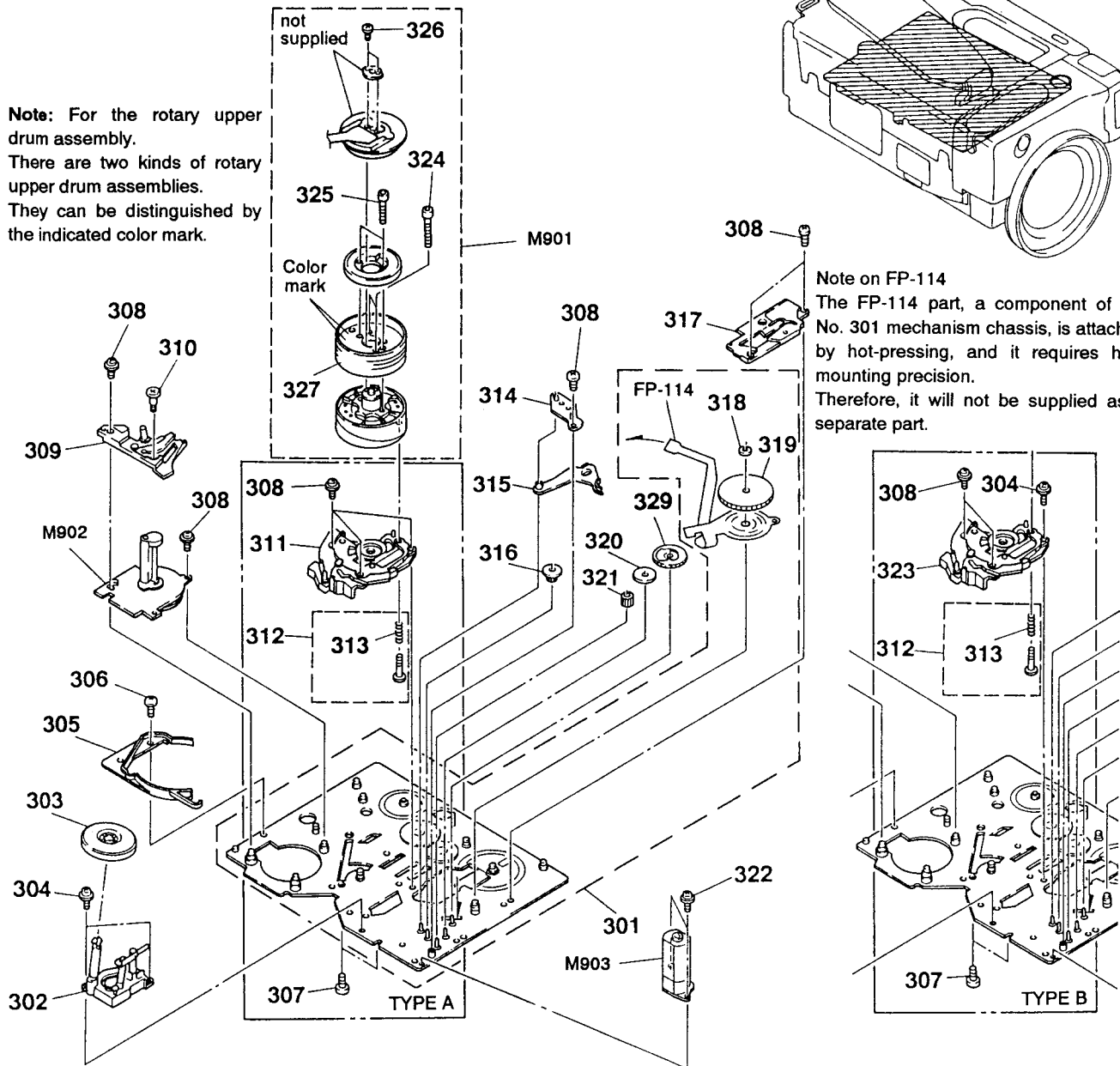
5-6. MECHANISM CHASSIS ASSEMBLY (1)

Note: For the rotary upper drum assembly.
There are two kinds of rotary upper drum assemblies.
They can be distinguished by the indicated color mark.



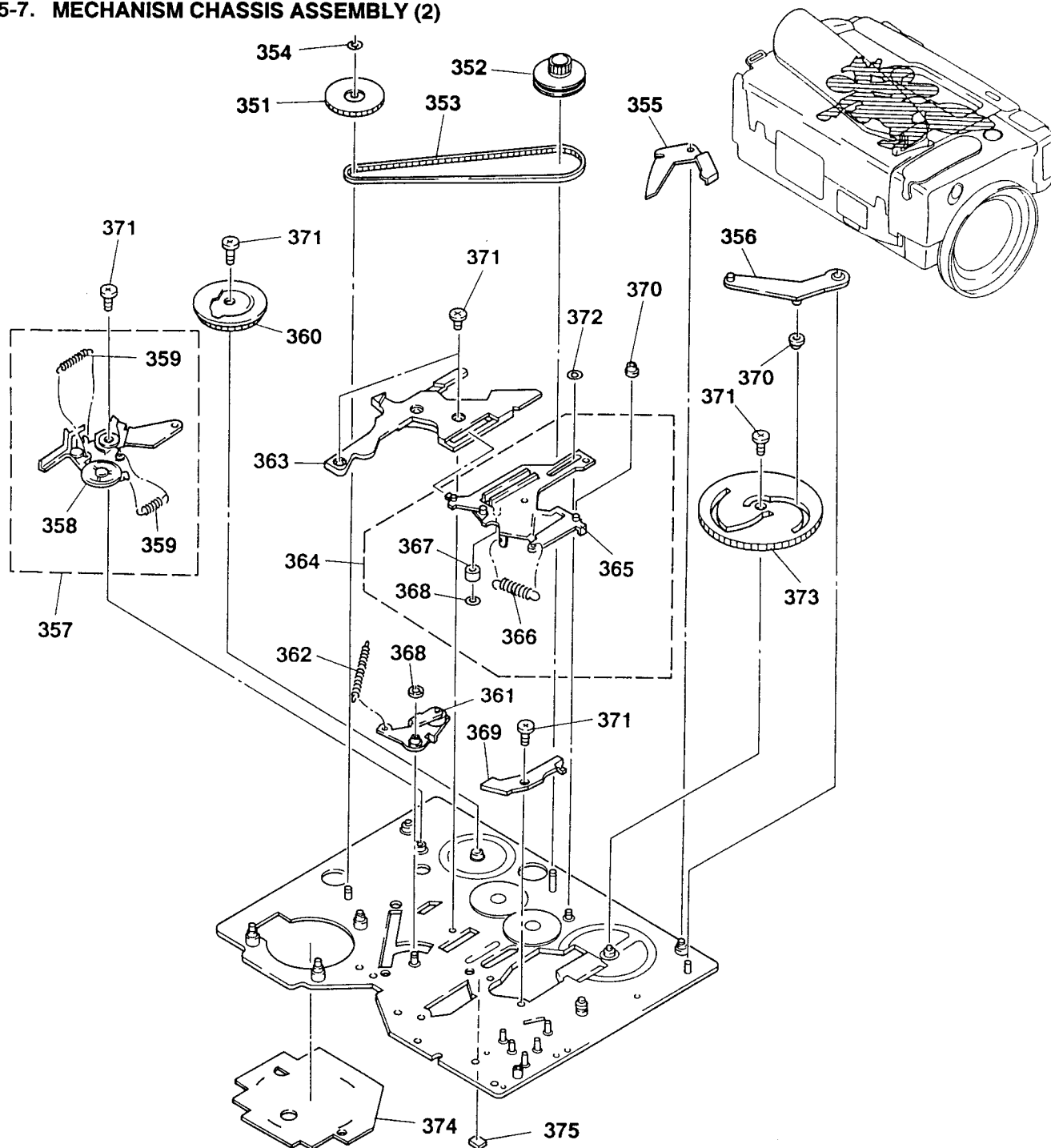
Note on FP-114

The FP-114 part, a component of the No. 301 mechanism chassis, is attached by hot-pressing, and it requires high mounting precision.
Therefore, it will not be supplied as a separate part.



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
301	A-7040-154-P	CHASSIS ASSY, MECHANICAL		318	3-579-788-01	WASHER, STOPPER	
302	A-7040-251-F	BASE (1) BLOCK ASSY (3), RAIL		319	X-3727-915-1	GEAR ASSY, MODE	
303	3-943-088-01	WHEEL, FLY, IP		320	X-3727-904-1	GEAR ASSY, NO. 2	
304	3-703-816-51	SCREW (M1.4X3.5), SPECIAL HEAD					
305	3-732-064-01	COVER, ROTOR		321	3-728-149-01	GEAR, NO. 0	
				322	3-732-087-31	SCREW (M1.4X1.8), SPECIAL HEAD	
306	3-728-126-01	SCREW (M1.4X2), SPECIAL HEAD		* 323	A-7040-203-G	BASE (A) BLOCK ASSY, DRUM (TYPE B)	
307	3-728-108-01	SCREW (M1.4X4.5)		324	3-727-809-01	BOLT (M1.4X5), HEXAGON SOCKET	
308	3-728-148-11	SCREW (M1.4X2.5), SPECIAL HEAD		325	3-727-807-01	BOLT (M1.7X3.3), HEXAGON SOCKET	
309	X-3941-027-2	RAIL (BASE) (3) ASSY (3), GUIDE					
310	3-732-084-01	SCREW (M1.4), SPECIAL HEAD		326	3-728-108-41	SCREW (M1.4X2.7)	
* 311	A-7040-222-D	BASE (M) BLOCK ASSY, DRUM (TYPE A)		327	A-7049-461-A	DRUM ASSY, UPPER, ROTARY (DGR-80-R-(1))	
312	X-3728-009-2	SCREW ASSY, FITTING					
313	3-743-633-01	SPRING, COMPRESSION		327	A-7049-464-A	DRUM ASSY, UPPER, ROTARY (DGR-80-R-(2))	
314	3-728-119-01	RETAINER, GEAR					
315	X-3727-906-1	ARM ASSY		329	3-728-189-02	GEAR, NO. 3	
				M901	A-7048-653-A	DRUM BLOCK ASSY (DGH-80D-R)	
316	X-3727-903-1	GEAR ASSY, NO. 1		M902	8-835-329-12	MOTOR, DC U-21A (CAPSTAN)	
317	3-728-231-06	BASE, TG-1 CAM		M903	1-541-607-21	MOTOR, DC (LA12G-344VA) (LOADING)	

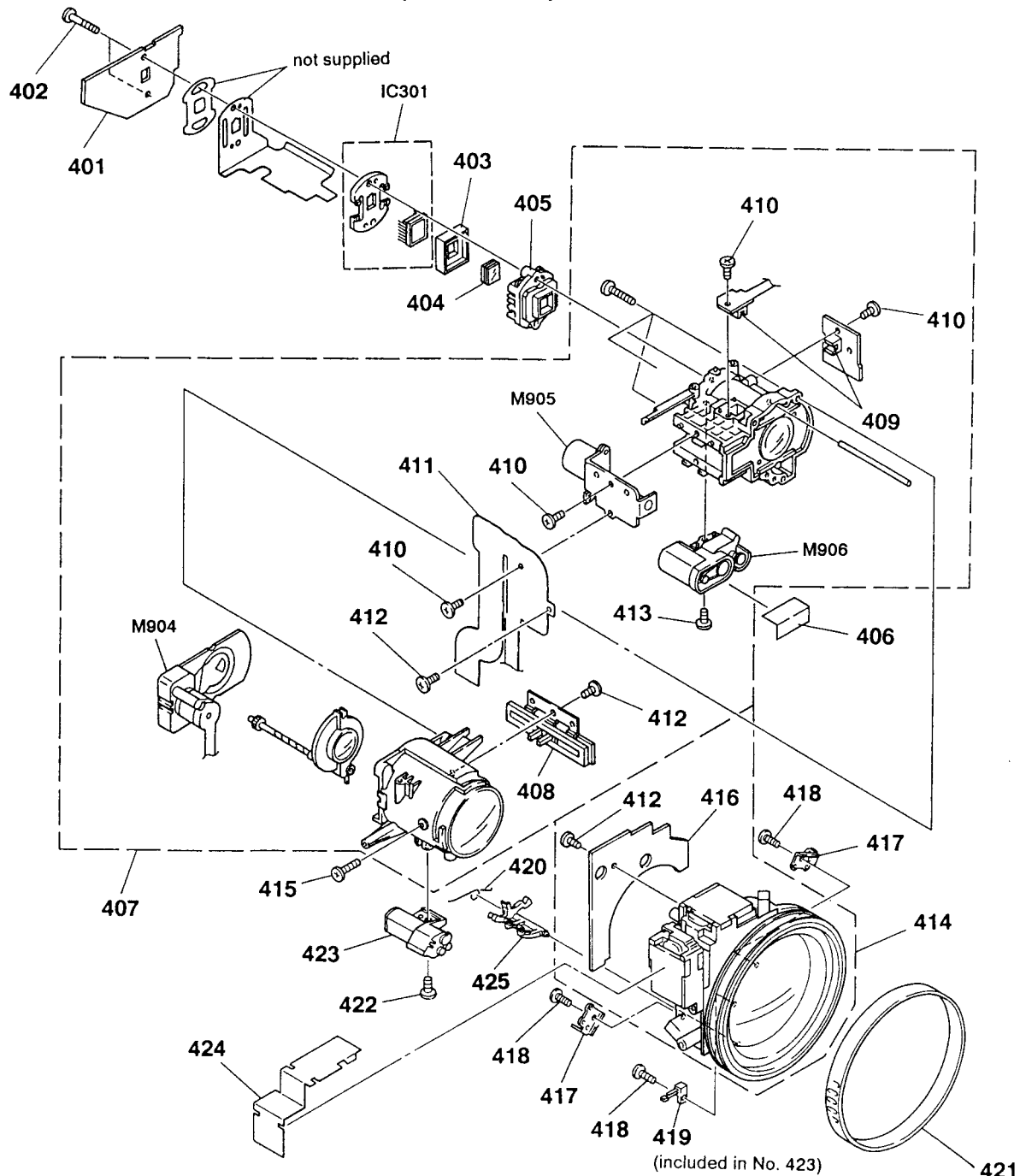
5-7. MECHANISM CHASSIS ASSEMBLY (2)



Ref.No.	Part No.	Description	Remark
351	X-3727-930-1	GEAR ASSY, CONVERSION	
352	X-3727-931-1	PULLEY ASSY, MIDWAY	
353	3-728-212-01	BELT, RELAY	
354	3-728-091-01	WASHER, STOPPER	
355	3-728-154-01	ARM, EJ	
356	3-941-980-01	ARM (T), LS	
357	A-7040-152-A	ARM BLOCK ASSY, PINCH PRESS	
358	X-3940-335-1	ARM ASSY, PINCH PRESS	
359	3-728-065-01	SPRING, TENSION	
360	3-728-190-01	CAM (B)	
361	X-3727-924-2	ARM ASSY, GUIDE LOCK	
362	3-728-015-01	SPRING (POWER TENSION), TENSION	
363	3-728-228-03	SUPPORT (T), GL	

Ref.No.	Part No.	Description	Remark
364	A-7040-153-A	SLIDER BLOCK ASSY, GL	
365	X-3941-931-1	SLIDER ASSY, GL	
366	3-727-929-01	SPRING (POWER TENSION), TENSION	
367	3-728-144-01	ROLLER, GL	
368	3-331-007-11	WASHER	
369	3-728-213-01	SUPPORT (S), GL	
370	3-728-109-01	ROLLER, LS	
371	3-728-148-11	SCREW (M1.4X2.5), SPECIAL HEAD	
372	3-315-384-31	WASHER, STOPPER	
373	3-728-208-02	CAM (A)	
374	3-942-901-01	COVER (L), CAPSTAN	
375	3-743-634-01	SPACER, RUBBER	

5-8. CCD ASSEMBLY AND ZOOM LENS (VCL-6210WB) ASSEMBLY



(included in No. 423)

Ref.No.	Part No.	Description
* 401	A-7071-877-A	CD-108P BOARD, COMPLETE
402	3-947-268-01	SCREW (B TIGHT) (2), TAPPING
403	3-946-857-11	RUBBER (S), SEAL
404	1-547-529-21	FILTER BLOCK, OPTICAL (OFB-03-03)
405	3-946-856-11	ADAPTOR (H), CCD FITTING
* 406	3-948-061-01	COVER, Z GEAR
407	3-708-436-01	LENS BLOCK
408	3-708-446-01	METER, POTENTIAL
409	3-708-435-01	PHOTO INTERRUPTER
410	3-707-946-01	SCREW
411	3-708-441-01	FLEXIBLE
412	3-708-053-01	SCREW, FB FITTING
413	3-708-450-01	SCREW, PZ
414	3-708-437-01	VAP BLOCK
415	3-708-449-01	SCREW, VAP FITTING

Ref.No.	Part No.	Description
416	3-708-440-01	CS BOARD
417	3-708-438-01	BRACKET
418	3-707-947-01	SCREW, METER LENS
419	3-708-447-01	SWITCH, LEAF
420	3-708-448-01	SP, MECHANICAL LOCK
421	3-708-439-01	KNURL, (F) RUBBER
422	3-708-249-01	SCREW AF BLOCK
423	3-708-444-01	MOTOR ASSY, INITIALIZE
424	3-947-593-01	COVER, ACTUATOR
425	3-708-561-01	LEVER, LOCK
IC301	A-7030-371-A	CCD ASSY (059 SERVICE) (CCD IMAGER)
M904	3-708-445-01	METER, IG (IRIS)
M905	3-708-443-01	MOTOR ASSY, STEPPING (FOCUS)
M906	3-708-442-01	MOTOR ASSY, PZ (ZOOM)

SECTION 6

AU-151

ELECTRICAL PARTS LIST

NOTE:

The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F : nonflammable
- Hardware (# mark) list is given in the last of this parts list.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA...: μ PA...,
uPB...: μ PB..., uPC...: μ PC...,
uPD...: μ PD...
- CAPACITORS
uF : μ F
- COILS
uH : μ H

Ref.No.	Part No.	Description	Remark			Ref.No.	Part No.	Description	Remark		
*	A-7063-662-A	AU-151 BOARD, COMPLETE ***** (Ref.No. 6,000 Series)				C643	1-162-974-11	CERAMIC CHIP	0.01uF		50V
		< CAPACITOR >				C644	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C601	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	C645	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C602	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	C646	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C603	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C647	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C605	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C648	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C606	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C649	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C607	1-128-003-11	ELECT CHIP	22uF	20%	4V	C650	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C608	1-128-003-11	ELECT CHIP	22uF	20%	4V	C651	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C609	1-126-205-11	ELECT CHIP	47uF	20%	6.3V	C653	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C610	1-126-205-11	ELECT CHIP	47uF	20%	6.3V	C654	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C611	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V	C655	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C612	1-126-205-11	ELECT CHIP	47uF	20%	6.3V	C656	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C613	1-126-607-11	ELECT CHIP	47uF	20%	4V	C657	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C614	1-164-222-11	CERAMIC CHIP	0.22uF		25V	C658	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C615	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V			< CONNECTOR >			
C616	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V	CN601	1-691-551-11	PIN, CONNECTOR (SMD) 8P			
C617	1-126-395-11	ELECT	22uF	20%	16V	CN602	1-580-056-21	PIN, CONNECTOR 3P			
C618	1-128-008-11	ELECT CHIP	3.3uF	20%	35V	CN603	1-580-252-31	CONNECTOR, BOARD TO BOARD 30P			
C619	1-164-222-11	CERAMIC CHIP	0.22uF		25V			< DIODE >			
C620	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V	D601	8-719-404-46	DIODE	MA110		
C622	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V	D602	8-719-420-14	DIODE	MA8082-M		
C623	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V	D603	8-719-420-14	DIODE	MA8082-M		
C624	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V	D604	8-719-404-46	DIODE	MA110		
C625	1-135-091-91	TANTAL. CHIP	1uF	20%	16V	D605	8-719-404-46	DIODE	MA110		
C626	1-135-091-91	TANTAL. CHIP	1uF	20%	16V	D606	8-719-404-35	DIODE	MA141WK		
C627	1-128-004-11	ELECT CHIP	10uF	20%	16V	D607	8-719-404-35	DIODE	MA141WK		
C628	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	D608	8-719-420-14	DIODE	MA8082-M		
C629	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V	D609	8-719-420-14	DIODE	MA8082-M		
C630	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V			< FILTER >			
C631	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	FL601	1-236-837-21	FILTER, BAND PASS			
C632	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	FL602	1-236-838-21	FILTER, BAND PASS			
C633	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V			< IC >			
C634	1-128-006-11	ELECT CHIP	4.7uF	20%	25V	IC601	8-759-159-94	IC	LA7491W-TBM		
C635	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V			< TRANSISTOR >			
C636	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	Q601	8-729-020-75	TRANSISTOR	2SC4998		
C637	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	Q602	8-729-020-75	TRANSISTOR	2SC4998		
C638	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V	Q603	8-729-421-90	TRANSISTOR	XN4113		
C639	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V						
C640	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V						
C641	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V						

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
Q604	8-729-402-81	TRANSISTOR	XN4501	R651	1-216-821-11	METAL CHIP	1K 5% 1/16W
Q605	8-729-420-20	TRANSISTOR	XN4312	R652	1-216-821-11	METAL CHIP	1K 5% 1/16W
Q606	8-729-010-60	TRANSISTOR	MSA1586-BC	R654	1-216-864-11	METAL CHIP	0 5% 1/16W
Q608	8-729-402-81	TRANSISTOR	XN4501	R656	1-216-295-00	METAL CHIP	0 5% 1/10W
Q610	8-729-402-42	TRANSISTOR	UN5213	R657	1-216-841-11	METAL CHIP	47K 5% 1/16W
Q611	8-729-403-35	TRANSISTOR	UN5113	R658	1-216-833-11	METAL CHIP	10K 5% 1/16W
Q612	8-729-402-42	TRANSISTOR	UN5213	R660	1-216-831-11	METAL CHIP	6.8K 5% 1/16W
Q613	8-729-020-75	TRANSISTOR	2SC4998	R661	1-216-831-11	METAL CHIP	6.8K 5% 1/16W
Q614	8-729-020-75	TRANSISTOR	2SC4998	R662	1-216-830-11	METAL CHIP	5.6K 5% 1/16W
< RESISTOR >				R663	1-216-830-11	METAL CHIP	5.6K 5% 1/16W
R601	1-216-817-11	METAL CHIP	470 5% 1/16W	R664	1-216-833-11	METAL CHIP	10K 5% 1/16W
R602	1-216-817-11	METAL CHIP	470 5% 1/16W	R665	1-216-837-11	METAL CHIP	22K 5% 1/16W
R605	1-216-810-11	METAL CHIP	120 5% 1/16W	R666	1-216-833-11	METAL CHIP	10K 5% 1/16W
R606	1-216-810-11	METAL CHIP	120 5% 1/16W	R667	1-216-841-11	METAL CHIP	47K 5% 1/16W
R607	1-216-823-11	METAL CHIP	1.5K 5% 1/16W	R668	1-216-830-11	METAL CHIP	5.6K 5% 1/16W
R608	1-216-841-11	METAL CHIP	47K 5% 1/16W	R670	1-216-831-11	METAL CHIP	6.8K 5% 1/16W
R609	1-216-839-11	METAL CHIP	33K 5% 1/16W	R671	1-216-833-11	METAL CHIP	10K 5% 1/16W
R610	1-216-841-11	METAL CHIP	47K 5% 1/16W	R672	1-216-837-11	METAL CHIP	22K 5% 1/16W
R611	1-216-823-11	METAL CHIP	1.5K 5% 1/16W	R673	1-216-837-11	METAL CHIP	22K 5% 1/16W
R612	1-216-841-11	METAL CHIP	47K 5% 1/16W	R674	1-216-821-11	METAL CHIP	1K 5% 1/16W
R613	1-216-817-11	METAL CHIP	470 5% 1/16W	R675	1-216-821-11	METAL CHIP	1K 5% 1/16W
R614	1-216-817-11	METAL CHIP	470 5% 1/16W	*****			
R615	1-216-833-11	METAL CHIP	10K 5% 1/16W	* A-7071-877-A CD-108P BOARD, COMPLETE			
R616	1-216-833-11	METAL CHIP	10K 5% 1/16W	*****			
R617	1-216-839-11	METAL CHIP	33K 5% 1/16W	(Ref. No. 1,000 Series)			
R618	1-216-839-11	METAL CHIP	33K 5% 1/16W	< CAPACITOR >			
R620	1-216-833-11	METAL CHIP	10K 5% 1/16W	C301	1-128-006-11	ELECT CHIP	4.7uF 20% 25V
R622	1-216-849-11	METAL CHIP	220K 5% 1/16W	C302	1-128-013-11	ELECT CHIP	1uF 20% 50V
R623	1-216-833-11	METAL CHIP	10K 5% 1/16W	C303	1-128-008-11	ELECT CHIP	3.3uF 20% 35V
R624	1-216-849-11	METAL CHIP	220K 5% 1/16W	C305	1-162-637-11	CERAMIC CHIP	0.47uF 16V
R625	1-216-836-11	METAL CHIP	18K 5% 1/16W	C306	1-126-607-11	ELECT CHIP	47uF 20% 4V
R626	1-216-841-11	METAL CHIP	47K 5% 1/16W	C307	1-128-004-11	ELECT CHIP	10uF 20% 16V
R627	1-216-863-11	METAL GLAZE	3.3M 5% 1/16W	C308	1-128-013-11	ELECT CHIP	1uF 20% 50V
R628	1-216-863-11	METAL GLAZE	3.3M 5% 1/16W	C309	1-162-974-11	CERAMIC CHIP	0.01uF 50V
R630	1-216-833-11	METAL CHIP	10K 5% 1/16W	C310	1-164-156-11	CERAMIC CHIP	0.1uF 25V
R631	1-216-834-11	METAL CHIP	12K 5% 1/16W	C312	1-135-145-11	TANTALUM CHIP	0.47uF 10% 35V
R632	1-216-841-11	METAL CHIP	47K 5% 1/16W	< CONNECTOR >			
R633	1-216-820-11	METAL CHIP	820 5% 1/16W	CN301	1-573-525-21	CONNECTOR, BOARD TO BOARD	16P
R634	1-216-851-11	METAL CHIP	330K 5% 1/16W	< DIODE >			
R635	1-216-849-11	METAL CHIP	220K 5% 1/16W	D301	8-719-820-05	DIODE	1SS181
R637	1-216-864-11	METAL CHIP	0 5% 1/16W	D302	8-719-800-76	DIODE	1SS226
R640	1-216-827-11	METAL CHIP	3.3K 5% 1/16W	D303	8-719-820-05	DIODE	1SS181
R641	1-216-821-11	METAL CHIP	1K 5% 1/16W	< COIL >			
R642	1-216-827-11	METAL CHIP	3.3K 5% 1/16W	L301	1-412-032-11	INDUCTOR CHIP	100uH
R645	1-216-823-11	METAL CHIP	1.5K 5% 1/16W				
R646	1-216-825-11	METAL CHIP	2.2K 5% 1/16W				
R647	1-216-864-11	METAL CHIP	0 5% 1/16W				
R648	1-216-833-11	METAL CHIP	10K 5% 1/16W				
R650	1-216-821-11	METAL CHIP	1K 5% 1/16W				

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< TRANSISTOR >							
Q301	8-729-010-75	TRANSISTOR MSC4116-B/C		C256	1-164-836-11	CERAMIC CHIP 6.8uF	16V
Q302	8-729-903-10	TRANSISTOR FMW1		C257	1-163-809-11	CERAMIC CHIP 0.047uF	10% 25V
Q303	8-729-232-86	TRANSISTOR 2SK1875		C258	1-164-836-11	CERAMIC CHIP 6.8uF	16V
< RESISTOR >				C259	1-163-809-11	CERAMIC CHIP 0.047uF	10% 25V
R301	1-216-845-11	METAL CHIP 100K 5% 1/16W		C970	1-128-530-11	ELECT CHIP 33uF	20% 10V
R302	1-216-857-11	METAL CHIP 1M 5% 1/16W		C971	1-164-005-11	CERAMIC CHIP 0.47uF	25V
R303	1-216-840-11	METAL CHIP 39K 5% 1/16W		C972	1-164-830-11	CERAMIC CHIP 1uF	22% 16V
R304	1-216-843-11	METAL CHIP 68K 5% 1/16W		C973	1-164-337-11	CERAMIC CHIP 2.2uF	16V
R305	1-216-845-11	METAL CHIP 100K 5% 1/16W		C974	1-164-830-11	CERAMIC CHIP 1uF	22% 16V
R306	1-216-820-11	METAL CHIP 820 5% 1/16W		C975	1-127-558-11	ELECT(SOLID) 10uF	20% 10V
R307	1-216-835-11	METAL CHIP 15K 5% 1/16W		C976	1-127-558-11	ELECT(SOLID) 10uF	20% 10V
R308	1-216-850-11	METAL CHIP 270K 5% 1/16W		C977	1-164-337-11	CERAMIC CHIP 2.2uF	16V
R309	1-216-833-11	METAL CHIP 10K 5% 1/16W		C978	1-164-337-11	CERAMIC CHIP 2.2uF	16V
R310	1-216-809-11	METAL CHIP 100 5% 1/16W		C979	1-164-830-11	CERAMIC CHIP 1uF	22% 16V
R311	1-216-828-11	METAL CHIP 3.9K 5% 1/16W		C980	1-164-005-11	CERAMIC CHIP 0.47uF	25V
*****				C981	1-164-830-11	CERAMIC CHIP 1uF	22% 16V
*△	A-7063-659-A	DD-58 BOARD, COMPLETE		C982	1-164-337-11	CERAMIC CHIP 2.2uF	16V
		*****		C983	1-164-337-11	CERAMIC CHIP 2.2uF	16V
		(Ref. No. 9,000 Series)		C984	1-164-836-11	CERAMIC CHIP 6.8uF	16V
< CAPACITOR >				C985	1-164-836-11	CERAMIC CHIP 6.8uF	16V
C230	1-128-530-11	ELECT CHIP 33uF 20% 10V		C986	1-164-830-11	CERAMIC CHIP 1uF	22% 16V
C231	1-126-204-11	ELECT CHIP 47uF 20% 16V		C987	1-164-337-11	CERAMIC CHIP 2.2uF	16V
C232	1-128-065-11	ELECT 68uF 20% 10V		C988	1-164-005-11	CERAMIC CHIP 0.47uF	25V
C233	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V		C989	1-164-830-11	CERAMIC CHIP 1uF	22% 16V
C234	1-163-119-00	CERAMIC CHIP 120PF 5% 50V		C990	1-164-337-11	CERAMIC CHIP 2.2uF	16V
C235	1-126-204-11	ELECT CHIP 47uF 20% 16V		C991	1-162-967-11	CERAMIC CHIP 0.0033uF	10% 50V
C236	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V		C992	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C237	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V		C993	1-128-530-11	ELECT CHIP 33uF	20% 10V
C238	1-162-953-11	CERAMIC CHIP 100PF 5% 50V		C996	1-164-633-11	CERAMIC CHIP 0.1uF	10% 25V
C239	1-162-962-11	CERAMIC CHIP 470PF 10% 50V		< CONNECTOR >			
C240	1-162-962-11	CERAMIC CHIP 470PF 10% 50V		CN231	1-691-588-11	PIN, CONNECTOR (1.5MM)(SMD) 5P	
C241	1-162-959-11	CERAMIC CHIP 330PF 5% 50V		CN232	1-691-534-11	CONNECTOR, BOARD TO BOARD 20P	
C242	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V		CN233	1-691-538-11	CONNECTOR, BOARD TO BOARD 28P	
C243	1-162-963-11	CERAMIC CHIP 680PF 10% 50V		< DIODE >			
C244	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V		D231	8-719-989-33	DIODE FC806	
C245	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V		< IC >			
C246	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V		IC231	8-759-035-98	IC MC141600FU	
C247	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V		IC232	8-759-035-98	IC MC141600FU	
C248	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V		< COIL >			
C249	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V		L231	1-424-519-21	COIL, MOLD CHOKE 1.0uH	
C250	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V		L234	1-424-519-21	COIL, MOLD CHOKE 1.0uH	
C252	1-164-005-11	CERAMIC CHIP 0.47uF 25V		L235	1-424-520-21	COIL, MOLD CHOKE 4.7uH	
C253	1-164-836-11	CERAMIC CHIP 6.8uF 16V		L236	1-424-520-21	COIL, MOLD CHOKE 4.7uH	
C254	1-164-830-11	CERAMIC CHIP 1uF 22% 16V		L237	1-424-520-21	COIL, MOLD CHOKE 4.7uH	
C255	1-164-836-11	CERAMIC CHIP 6.8uF 16V		L238	1-424-524-21	COIL, CHOKE 47uH	
				L239	1-424-524-21	COIL, CHOKE 47uH	

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
L240	1-424-524-21	COIL, CHOKE	47uH	R256	1-216-832-11	METAL CHIP	8. 2K 5% 1/16W
L241	1-412-030-11	INDUCTOR CHIP	22uH	R257	1-216-839-11	METAL CHIP	33K 5% 1/16W
L242	1-412-027-11	INDUCTOR CHIP	2. 2uH	R258	1-216-839-11	METAL CHIP	33K 5% 1/16W
L243	1-424-523-21	COIL, CHOKE	22uH	R259	1-216-838-11	METAL CHIP	27K 5% 1/16W
L244	1-424-523-21	COIL, CHOKE	22uH	R381	1-216-845-11	METAL CHIP	100K 5% 1/16W
L245	1-412-034-11	INDUCTOR CHIP	330uH	R382	1-216-845-11	METAL CHIP	100K 5% 1/16W
L246	1-412-034-11	INDUCTOR CHIP	330uH	R383	1-216-840-11	METAL CHIP	39K 5% 1/16W
L247	1-412-028-11	INDUCTOR CHIP	4. 7uH	R971	1-216-839-11	METAL CHIP	33K 5% 1/16W
L248	1-412-030-11	INDUCTOR CHIP	22uH	R972	1-216-839-11	METAL CHIP	33K 5% 1/16W
L249	1-424-522-21	COIL, CHOKE	10uH	R973	1-216-838-11	METAL CHIP	27K 5% 1/16W
L250	1-412-027-11	INDUCTOR CHIP	2. 2uH	R974	1-216-839-11	METAL CHIP	33K 5% 1/16W
L251	1-412-030-11	INDUCTOR CHIP	22uH	R975	1-216-832-11	METAL CHIP	8. 2K 5% 1/16W
< TRANSISTOR >				R976	1-216-841-11	METAL CHIP	47K 5% 1/16W
Q231	8-729-823-93	TRANSISTOR	FC150	R977	1-218-881-11	METAL CHIP	27K 0. 50% 1/16W
Q232	8-729-823-95	TRANSISTOR	FC149	R978	1-216-820-11	METAL CHIP	820 5% 1/16W
Q233	8-729-823-84	TRANSISTOR	FP102	R979	1-218-885-11	METAL CHIP	39K 0. 50% 1/16W
Q234	8-729-823-82	TRANSISTOR	FP101	R980	1-216-033-00	METAL CHIP	220 5% 1/10W
Q235	8-729-823-82	TRANSISTOR	FP101	R981	1-216-033-00	METAL CHIP	220 5% 1/10W
Q236	8-729-804-41	TRANSISTOR	2SB1122-S	R982	1-216-841-11	METAL CHIP	47K 5% 1/16W
Q237	8-729-823-84	TRANSISTOR	FP102	R984	1-216-841-11	METAL CHIP	47K 5% 1/16W
Q238	8-729-823-84	TRANSISTOR	FP102	R985	1-216-841-11	METAL CHIP	47K 5% 1/16W
Q239	8-729-823-93	TRANSISTOR	FC150	R986	1-216-852-11	METAL CHIP	390K 5% 1/16W
Q240	8-729-901-06	TRANSISTOR	DTA144EK	R987	1-216-850-11	METAL CHIP	270K 5% 1/16W
< RESISTOR >				R988	1-216-033-00	METAL CHIP	220 5% 1/10W
R231	1-216-845-11	METAL CHIP	100K 5% 1/16W	R989	1-216-033-00	METAL CHIP	220 5% 1/10W
R232	1-216-840-11	METAL CHIP	39K 5% 1/16W	R990	1-218-883-11	METAL CHIP	33K 0. 50% 1/16W
R233	1-216-835-11	METAL CHIP	15K 5% 1/16W	R991	1-216-821-11	METAL CHIP	1K 5% 1/16W
R234	1-216-840-11	METAL CHIP	39K 5% 1/16W	R992	1-216-845-11	METAL CHIP	100K 5% 1/16W
R235	1-216-836-11	METAL CHIP	18K 5% 1/16W	R993	1-216-033-00	METAL CHIP	220 5% 1/10W
R236	1-216-829-11	METAL CHIP	4. 7K 5% 1/16W	R994	1-216-033-00	METAL CHIP	220 5% 1/10W
R237	1-216-845-11	METAL CHIP	100K 5% 1/16W	R995	1-216-009-00	METAL CHIP	22 5% 1/10W
R238	1-216-845-11	METAL CHIP	100K 5% 1/16W	R996	1-216-841-11	METAL CHIP	47K 5% 1/16W
R239	1-218-883-11	METAL CHIP	33K 0. 50% 1/16W	R997	1-216-827-11	METAL CHIP	3. 3K 5% 1/16W
R240	1-218-883-11	METAL CHIP	33K 0. 50% 1/16W	< VARIABLE RESISTOR >			
R241	1-218-881-11	METAL CHIP	27K 0. 50% 1/16W	RV231	1-238-858-11	RES, ADJ, CERMET	47K
R242	1-216-855-11	METAL CHIP	680K 5% 1/16W	RV232	1-238-857-11	RES, ADJ, CERMET	22K
R243	1-216-837-11	METAL CHIP	22K 5% 1/16W	< TRASFORMER >			
R244	1-218-881-11	METAL CHIP	27K 0. 50% 1/16W	T231	1-450-785-21	TRANSFORMER, CONVERTER	
R245	1-216-837-11	METAL CHIP	22K 5% 1/16W	*****			
R246	1-216-824-11	METAL CHIP	1. 8K 5% 1/16W	* A-7062-792-A FP-423 BLOCK ASSY (Ref.No. 4000 Series)			
R247	1-218-885-11	METAL CHIP	39K 0. 50% 1/16W	*****			
R248	1-218-885-11	METAL CHIP	39K 0. 50% 1/16W	3-727-954-01 HOLDER (T), SENSOR			
R249	1-216-841-11	METAL CHIP	47K 5% 1/16W	3-727-957-01 HOLDER (S), SENSOR			
R250	1-216-841-11	METAL CHIP	47K 5% 1/16W	3-732-046-01 HOLDER, LED			
R251	1-216-845-11	METAL CHIP	100K 5% 1/16W				
R252	1-216-850-11	METAL CHIP	270K 5% 1/16W				
R253	1-218-875-11	METAL CHIP	15K 0. 50% 1/16W				
R254	1-218-895-11	METAL CHIP	100K 0. 50% 1/16W				
R255	1-216-841-11	METAL CHIP	47K 5% 1/16W				

FP-423

HJ-14P

LJ-13P

MA-174P

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
		< DIODE >				*****	
D991	8-719-988-42	DIODE GL453S		*	A-7071-879-A	LJ-13P BOARD, COMPLETE	
		< HALL ELEMENT>				*****	
H991	1-808-448-11	ELEMENT, HALL (CHIP TYPE)				(Ref.No. 5,000 Series)	
H992	1-808-448-11	ELEMENT, HALL (CHIP TYPE)				< CAPACITOR >	
		< TRANSISTOR >		C511	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
Q991	8-729-907-25	TRANSISTOR PT4850F		C513	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
Q992	8-729-907-25	TRANSISTOR PT4850F				< CONNECTOR >	
		< RESISTOR >		CN511	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
R991	1-216-817-11	METAL CHIP 470 5% 1/16W				< DIODE >	
R992	1-216-817-11	METAL CHIP 470 5% 1/16W		D513	8-719-988-62	DIODE 1SS355	
R993	1-216-817-11	METAL CHIP 470 5% 1/16W				< JACK >	
R994	1-216-817-11	METAL CHIP 470 5% 1/16W		J511	1-565-276-21	JACK, ULTRA SMALL 1P (REMOTE)	
		< SWITCH >				< RESISTOR >	
S991	1-572-611-11	SWITCH, LEAF		R511	1-216-296-00	METAL CHIP 0 5% 1/8W	
S992	1-572-802-12	SWITCH, PUSH (3 KEY)		R512	1-216-296-00	METAL CHIP 0 5% 1/8W	
		*****		R513	1-216-296-00	METAL CHIP 0 5% 1/8W	
*	A-7071-878-A	HJ-14P BOARD, COMPLETE				*****	
		*****		*	A-7063-665-A	MA-174P BOARD, COMPLETE	
		(Ref.No. 6,000 Series)				*****	
		< CAPACITOR >				(Ref.No. 7,000 Series)	
C501	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V				3-947-195-01	PLATE, GROUND, MC
C502	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V				< CAPACITOR >	
C503	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V		C901	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
		< CONNECTOR >		C905	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
CN501	1-691-550-11	PIN, CONNECTOR (1.5MM)(SMD) 3P		C906	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
		< DIODE >		C907	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
D501	8-719-420-14	DIODE MA8082-M		C908	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
D502	8-719-988-62	DIODE 1SS355				C909	1-164-222-11 CERAMIC CHIP 0.22uF 25V
D503	8-719-420-14	DIODE MA8082-M		C910	1-164-222-11	CERAMIC CHIP 0.22uF 25V	
D504	8-719-988-62	DIODE 1SS355		C911	1-162-638-11	CERAMIC CHIP 1uF 16V	
D505	8-719-988-62	DIODE 1SS355		C912	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	
		< JACK >		C913	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
J501	1-569-809-11	JACK (SMALL TYPE)(PHONES)				C914	1-164-227-11 CERAMIC CHIP 0.022uF 10% 25V
		< COIL >		C916	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
L501	1-410-369-11	INDUCTOR CHIP 1uH		C917	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
L502	1-410-369-11	INDUCTOR CHIP 1uH		C918	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
L503	1-410-369-11	INDUCTOR CHIP 1uH		C919	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
						C920	1-162-957-11 CERAMIC CHIP 220PF 5% 50V
						C921	1-162-638-11 CERAMIC CHIP 1uF 16V
						C922	1-164-245-11 CERAMIC CHIP 0.015uF 10% 25V

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C923	1-162-957-11	CERAMIC CHIP	220PF 5% 50V	C982	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C924	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V			< CONNECTOR >	
C925	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V	CN901	1-691-591-11	PIN, CONNECTOR (1.5MM) (SMD) 8P	
C926	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	CN902	1-691-591-11	PIN, CONNECTOR (1.5MM) (SMD) 8P	
C927	1-126-205-11	ELECT CHIP	47uF 20% 6.3V	CN903	1-691-550-11	PIN, CONNECTOR (1.5MM) (SMD) 3P	
C928	1-164-634-11	CERAMIC CHIP	1uF 16V			< DIODE >	
C929	1-164-634-11	CERAMIC CHIP	1uF 16V	D901	8-719-404-46	DIODE MA110	
C931	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	D903	8-719-404-46	DIODE MA110	
C932	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	D904	8-719-420-14	DIODE MA8082-M	
C933	1-162-953-11	CERAMIC CHIP	100PF 5% 50V	D905	8-719-420-14	DIODE MA8082-M	
C934	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V			< IC >	
C935	1-162-953-11	CERAMIC CHIP	100PF 5% 50V	IC901	8-759-057-79	IC LA7470V	
C936	1-164-232-11	CERAMIC CHIP	0.01uF 50V			< JACK >	
C937	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	J901	1-569-810-11	JACK (SMALL TYPE) (MIC)	
C938	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V			< COIL >	
C939	1-162-953-11	CERAMIC CHIP	100PF 5% 50V	L901	1-410-993-11	INDUCTOR CHIP 1uH	
C940	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	L902	1-410-993-11	INDUCTOR CHIP 1uH	
C941	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	L903	1-410-993-11	INDUCTOR CHIP 1uH	
C942	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V			< TRANSISTOR >	
C943	1-162-953-11	CERAMIC CHIP	100PF 5% 50V	Q901	8-729-015-63	TRANSISTOR XN4556	
C944	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V	Q902	8-729-015-63	TRANSISTOR XN4556	
C945	1-162-953-11	CERAMIC CHIP	100PF 5% 50V	Q904	8-729-822-97	TRANSISTOR 2SC4211-5.6.7	
C946	1-164-232-11	CERAMIC CHIP	0.01uF 50V	Q905	8-729-822-94	TRANSISTOR FC102	
C947	1-164-245-11	CERAMIC CHIP	0.015uF 10% 25V	Q907	8-729-822-48	TRANSISTOR FC101	
C948	1-135-201-11	TANTALUM CHIP	10uF 20% 4V	Q908	8-729-402-42	TRANSISTOR UN5213	
C949	1-162-953-11	CERAMIC CHIP	100PF 5% 50V	Q909	8-729-822-97	TRANSISTOR 2SC4211-5.6.7	
C950	1-163-989-11	CERAMIC CHIP	0.033uF 10% 25V	Q910	8-729-822-94	TRANSISTOR FC102	
C951	1-162-953-11	CERAMIC CHIP	100PF 5% 50V	Q911	8-729-822-94	TRANSISTOR FC102	
C952	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	Q912	8-729-822-48	TRANSISTOR FC101	
C953	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	Q913	8-729-905-23	TRANSISTOR 2SA1576-R	
C954	1-164-173-11	CERAMIC CHIP	0.0039uF 10% 50V	Q914	8-729-822-94	TRANSISTOR FC102	
C956	1-162-953-11	CERAMIC CHIP	100PF 5% 50V	Q915	8-729-822-94	TRANSISTOR FC102	
C957	1-162-953-11	CERAMIC CHIP	100PF 5% 50V	Q917	8-729-403-35	TRANSISTOR UN5113	
C959	1-162-953-11	CERAMIC CHIP	100PF 5% 50V	Q918	8-729-822-48	TRANSISTOR FC101	
C960	1-163-989-11	CERAMIC CHIP	0.033uF 10% 25V	Q921	8-729-822-94	TRANSISTOR FC102	
C961	1-163-989-11	CERAMIC CHIP	0.033uF 10% 25V	Q922	8-729-822-48	TRANSISTOR FC101	
C962	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	Q923	8-729-905-23	TRANSISTOR 2SA1576-R	
C963	1-163-989-11	CERAMIC CHIP	0.033uF 10% 25V	Q924	8-729-822-94	TRANSISTOR FC102	
C964	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V	Q925	8-729-822-94	TRANSISTOR FC102	
C965	1-162-953-11	CERAMIC CHIP	100PF 5% 50V	Q927	8-729-403-35	TRANSISTOR UN5113	
C969	1-164-344-11	CERAMIC CHIP	0.068uF 10% 25V	Q930	8-729-403-35	TRANSISTOR UN5113	
C971	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V				
C972	1-164-670-11	CERAMIC CHIP	1200PF 5% 16V				
C973	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V				
C974	1-162-957-11	CERAMIC CHIP	220PF 5% 50V				
C975	1-162-957-11	CERAMIC CHIP	220PF 5% 50V				
C976	1-162-957-11	CERAMIC CHIP	220PF 5% 50V				
C977	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V				
C980	1-162-953-11	CERAMIC CHIP	100PF 5% 50V				
C981	1-162-953-11	CERAMIC CHIP	100PF 5% 50V				

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
< RESISTOR >							
R892	1-216-833-11	METAL CHIP	10K 5% 1/16W	R949	1-216-843-11	METAL CHIP	68K 5% 1/16W
R893	1-216-823-11	METAL CHIP	1.5K 5% 1/16W	R950	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R894	1-216-821-11	METAL CHIP	1K 5% 1/16W	R951	1-216-826-11	METAL CHIP	2.7K 5% 1/16W
R895	1-216-821-11	METAL CHIP	1K 5% 1/16W	R953	1-216-849-11	METAL CHIP	220K 5% 1/16W
R897	1-216-833-11	METAL CHIP	10K 5% 1/16W	R954	1-216-845-11	METAL CHIP	100K 5% 1/16W
R898	1-216-833-11	METAL CHIP	10K 5% 1/16W	R955	1-216-843-11	METAL CHIP	68K 5% 1/16W
R901	1-216-817-11	METAL CHIP	470 5% 1/16W	R956	1-216-845-11	METAL CHIP	100K 5% 1/16W
R905	1-216-831-11	METAL CHIP	6.8K 5% 1/16W	R957	1-216-841-11	METAL CHIP	47K 5% 1/16W
R906	1-216-818-11	METAL CHIP	560 5% 1/16W	R958	1-216-841-11	METAL CHIP	47K 5% 1/16W
R907	1-216-837-11	METAL CHIP	22K 5% 1/16W	R959	1-216-841-11	METAL CHIP	47K 5% 1/16W
R908	1-216-839-11	METAL CHIP	33K 5% 1/16W	R960	1-216-855-11	METAL CHIP	680K 5% 1/16W
R909	1-216-834-11	METAL CHIP	12K 5% 1/16W	R961	1-216-828-11	METAL CHIP	3.9K 5% 1/16W
R910	1-216-841-11	METAL CHIP	47K 5% 1/16W	R963	1-216-826-11	METAL CHIP	2.7K 5% 1/16W
R912	1-216-834-11	METAL CHIP	12K 5% 1/16W	R964	1-216-847-11	METAL CHIP	150K 5% 1/16W
R913	1-216-828-11	METAL CHIP	3.9K 5% 1/16W	R965	1-216-848-11	METAL CHIP	180K 5% 1/16W
R914	1-216-828-11	METAL CHIP	3.9K 5% 1/16W	R966	1-216-841-11	METAL CHIP	47K 5% 1/16W
R915	1-216-833-11	METAL CHIP	10K 5% 1/16W	R967	1-216-832-11	METAL CHIP	8.2K 5% 1/16W
R916	1-216-836-11	METAL CHIP	18K 5% 1/16W	R968	1-216-841-11	METAL CHIP	47K 5% 1/16W
R917	1-216-849-11	METAL CHIP	220K 5% 1/16W	R969	1-216-830-11	METAL CHIP	5.6K 5% 1/16W
R918	1-216-846-11	METAL CHIP	120K 5% 1/16W	R970	1-216-836-11	METAL CHIP	18K 5% 1/16W
R919	1-216-833-11	METAL CHIP	10K 5% 1/16W	R971	1-216-839-11	METAL CHIP	33K 5% 1/16W
R920	1-216-826-11	METAL CHIP	2.7K 5% 1/16W	R972	1-216-835-11	METAL CHIP	15K 5% 1/16W
R921	1-216-828-11	METAL CHIP	3.9K 5% 1/16W	R975	1-216-823-11	METAL CHIP	1.5K 5% 1/16W
R922	1-216-828-11	METAL CHIP	3.9K 5% 1/16W	R976	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R923	1-216-849-11	METAL CHIP	220K 5% 1/16W	R977	1-216-826-11	METAL CHIP	2.7K 5% 1/16W
R924	1-216-848-11	METAL CHIP	180K 5% 1/16W	R978	1-216-843-11	METAL CHIP	68K 5% 1/16W
R925	1-216-831-11	METAL CHIP	6.8K 5% 1/16W	R979	1-216-843-11	METAL CHIP	68K 5% 1/16W
R926	1-216-818-11	METAL CHIP	560 5% 1/16W	R980	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R927	1-216-837-11	METAL CHIP	22K 5% 1/16W	R981	1-216-826-11	METAL CHIP	2.7K 5% 1/16W
R928	1-216-839-11	METAL CHIP	33K 5% 1/16W	R982	1-216-841-11	METAL CHIP	47K 5% 1/16W
R929	1-216-834-11	METAL CHIP	12K 5% 1/16W	R983	1-216-849-11	METAL CHIP	220K 5% 1/16W
R930	1-216-845-11	METAL CHIP	100K 5% 1/16W	R984	1-216-845-11	METAL CHIP	100K 5% 1/16W
R931	1-216-828-11	METAL CHIP	3.9K 5% 1/16W	R985	1-216-843-11	METAL CHIP	68K 5% 1/16W
R933	1-216-826-11	METAL CHIP	2.7K 5% 1/16W	R986	1-216-848-11	METAL CHIP	180K 5% 1/16W
R934	1-216-847-11	METAL CHIP	150K 5% 1/16W	R987	1-216-833-11	METAL CHIP	10K 5% 1/16W
R935	1-216-848-11	METAL CHIP	180K 5% 1/16W	R988	1-216-835-11	METAL CHIP	15K 5% 1/16W
R936	1-216-841-11	METAL CHIP	47K 5% 1/16W	R989	1-216-841-11	METAL CHIP	47K 5% 1/16W
R937	1-216-832-11	METAL CHIP	8.2K 5% 1/16W	R990	1-216-855-11	METAL CHIP	680K 5% 1/16W
R938	1-216-841-11	METAL CHIP	47K 5% 1/16W	R993	1-216-826-11	METAL CHIP	2.7K 5% 1/16W
R939	1-216-830-11	METAL CHIP	5.6K 5% 1/16W	R994	1-216-826-11	METAL CHIP	2.7K 5% 1/16W
R940	1-216-831-11	METAL CHIP	6.8K 5% 1/16W	R995	1-216-814-11	METAL CHIP	270 5% 1/16W
R941	1-216-839-11	METAL CHIP	33K 5% 1/16W	R996	1-216-814-11	METAL CHIP	270 5% 1/16W
R942	1-216-836-11	METAL CHIP	18K 5% 1/16W	R997	1-216-826-11	METAL CHIP	2.7K 5% 1/16W
R943	1-216-839-11	METAL CHIP	33K 5% 1/16W	R998	1-216-846-11	METAL CHIP	120K 5% 1/16W
R944	1-216-841-11	METAL CHIP	47K 5% 1/16W	< VARIABLE RESISTOR >			
R945	1-216-823-11	METAL CHIP	1.5K 5% 1/16W	RV901	1-238-854-11	RES, ADJ, CERMET 2.2K	
R946	1-216-829-11	METAL CHIP	4.7K 5% 1/16W				
R947	1-216-826-11	METAL CHIP	2.7K 5% 1/16W				
R948	1-216-843-11	METAL CHIP	68K 5% 1/16W				

MA-174P**RM-68P****SE-26P****VC-135**

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
		< SWITCH >					
S901	1-572-497-11	SWITCH, SLIDE (BUILT-IN MIC/ZOOM MIC)		C120	1-164-336-11	CERAMIC CHIP 0.33uF	25V
S902	1-571-684-11	SWITCH, TACTIL (FADER)		C121	1-135-161-21	TANTALUM CHIP 22uF	10% 10V
*****						< CONNECTOR >	
* A-7071-880-A RM-68P BOARD, COMPLETE				CN101	1-691-516-11	CONNECTOR, BOARD TO BOARD 24P	
		*****				< IC >	
		(Ref.No. 4,000 Series)		IC101	8-759-998-98	IC LM358D	
		< CAPACITOR >		IC102	8-759-981-75	IC RC3403AM	
C401	1-162-638-11	CERAMIC CHIP 1uF	16V	IC103	8-759-234-77	IC TC4S66F	
		< CONNECTOR >		IC104	8-759-234-77	IC TC4S66F	
CN401	1-580-056-21	PIN, CONNECTOR 3P				< RESISTOR >	
		< IC >		R101	1-216-837-11	METAL CHIP 22K 5%	1/16W
IC401	8-749-923-29	IC RS-20E-T		R102	1-216-837-11	METAL CHIP 22K 5%	1/16W
		< RESISTOR >		R103	1-216-837-11	METAL CHIP 22K 5%	1/16W
R401	1-216-017-00	METAL CHIP 47 5% 1/10W		R104	1-216-837-11	METAL CHIP 22K 5%	1/16W
		< SWITCH >		R105	1-216-837-11	METAL CHIP 22K 5%	1/16W
S401	1-692-043-11	SWITCH, PUSH (1 KEY)		R106	1-216-837-11	METAL CHIP 22K 5%	1/16W
		(REMOTE COMMANDER ON/OFF)		R107	1-218-768-11	METAL CHIP 470K 0.50%	1/10W
*****				R108	1-218-768-11	METAL CHIP 470K 0.50%	1/10W
* A-7063-663-A SE-26P BOARD, COMPLETE				R109	1-216-013-00	METAL CHIP 33 5%	1/10W
		*****		R111	1-216-013-00	METAL CHIP 33 5%	1/10W
		(Ref.No. 1,000 Series)		R113	1-216-841-11	METAL CHIP 47K 5%	1/16W
		< CAPACITOR >		R115	1-216-833-11	METAL CHIP 10K 5%	1/16W
C101	1-164-633-11	CERAMIC CHIP 0.1uF 10%	25V	R116	1-216-850-11	METAL CHIP 270K 5%	1/16W
C102	1-164-633-11	CERAMIC CHIP 0.1uF 10%	25V	R117	1-216-833-11	METAL CHIP 10K 5%	1/16W
C103	1-164-299-11	CERAMIC CHIP 0.22uF 10%	25V	R118	1-216-850-11	METAL CHIP 270K 5%	1/16W
C104	1-163-038-00	CERAMIC CHIP 0.1uF	25V	R119	1-216-833-11	METAL CHIP 10K 5%	1/16W
C105	1-164-299-11	CERAMIC CHIP 0.22uF 10%	25V	R120	1-216-833-11	METAL CHIP 10K 5%	1/16W
C106	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	R121	1-216-833-11	METAL CHIP 10K 5%	1/16W
C107	1-164-245-11	CERAMIC CHIP 0.015uF 10%	25V	R122	1-218-768-11	METAL CHIP 470K 0.50%	1/10W
C108	1-164-245-11	CERAMIC CHIP 0.015uF 10%	25V	R123	1-218-768-11	METAL CHIP 470K 0.50%	1/10W
C109	1-128-257-21	ELECT CHIP 33uF 20%	10V	R124	1-216-833-11	METAL CHIP 10K 5%	1/16W
C110	1-128-257-21	ELECT CHIP 33uF 20%	10V			< FLEXIBLE BOARD >	
C111	1-162-953-11	CERAMIC CHIP 100PF 5%	50V	W101	1-642-239-11	FP-486 FLEXIBLE BOARD	
C112	1-162-953-11	CERAMIC CHIP 100PF 5%	50V	*****			
C114	1-135-163-21	TANTAL. CHIP 47uF 20%	4V	* A-7063-661-A VC-135 BOARD, COMPLETE			
C116	1-135-161-21	TANTALUM CHIP 22uF 10%	10V			*****	
C117	1-135-163-21	TANTAL. CHIP 47uF 20%	4V			(Ref.No. 2,000 Series)	
C118	1-164-336-11	CERAMIC CHIP 0.33uF	25V			< CAPACITOR >	
C119	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C701	1-162-974-11	CERAMIC CHIP 0.01uF	50V
				C703	1-164-337-11	CERAMIC CHIP 2.2uF	16V
				C705	1-162-974-11	CERAMIC CHIP 0.01uF	50V
				C706	1-135-181-21	TANTALUM CHIP 4.7uF	20% 6.3V
				C707	1-164-360-11	CERAMIC CHIP 0.1uF	16V

VC-135

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
C708	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	C819	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C709	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C820	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C710	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C821	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C711	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C823	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C712	1-162-638-11	CERAMIC CHIP	1uF		16V	C826	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C713	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C827	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C714	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	C830	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C715	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C832	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C716	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C833	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C717	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C834	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C718	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C835	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C720	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	C836	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C721	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C837	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C723	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	C839	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C724	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	C841	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C725	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C845	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C726	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C846	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C727	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C851	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C728	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C853	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C730	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C854	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C731	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C855	1-135-161-21	TANTALUM CHIP	22uF	10%	10V
C735	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C856	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C737	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C857	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C738	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C858	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C741	1-162-915-11	CERAMIC CHIP	22PF	5%	50V	C859	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C742	1-162-943-11	CERAMIC CHIP	15PF	5%	50V	C860	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C743	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C861	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C744	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C862	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C745	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C863	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C746	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	C865	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C747	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C866	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C748	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C867	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C750	1-162-971-11	CERAMIC CHIP	0.001uF		50V	C868	1-162-638-11	CERAMIC CHIP	1uF		16V
C801	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C869	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C802	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	C870	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C803	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	C872	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C804	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C874	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C805	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C921	1-164-634-11	CERAMIC CHIP	1uF		16V
C806	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C922	1-164-634-11	CERAMIC CHIP	1uF		16V
C807	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C923	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C808	1-135-091-91	TANTAL. CHIP	1uF	20%	16V	C924	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C809	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	C926	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C810	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C930	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C811	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C931	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C813	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C932	1-135-092-21	TANTALUM CHIP	3.3uF	10%	16V
C814	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C933	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C815	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	C934	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C816	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C935	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C817	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C936	1-164-237-11	CERAMIC CHIP	16PF	5%	50V
C818	1-135-091-91	TANTAL. CHIP	1uF	20%	16V	C937	1-162-974-11	CERAMIC CHIP	0.01uF		50V

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C938	1-135-259-11	TANTAL. CHIP	10uF 20% 6.3V	IC851	8-759-513-26	IC XRU5846FS	
C939	1-162-974-11	CERAMIC CHIP	0.01uF 50V	IC852	8-759-701-24	IC NJM3414M	
C940	1-162-962-11	CERAMIC CHIP	470PF 10% 50V	IC853	8-759-998-96	IC LM324D	
C941	1-162-961-11	CERAMIC CHIP	330PF 10% 50V	IC855	8-759-038-8T	IC MPC1724M	
C942	1-164-360-11	CERAMIC CHIP	0.1uF 16V	IC856	8-759-823-51	IC LB1830M	
C943	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V	IC857	8-759-099-00	IC MB88101PFV-G-BND-ER	
C945	1-162-974-11	CERAMIC CHIP	0.01uF 50V	IC921	8-759-056-84	IC S-8420AF	
C947	1-162-638-11	CERAMIC CHIP	1uF 16V	IC923	8-759-044-78	IC AK6420F	
C949	1-162-974-11	CERAMIC CHIP	0.01uF 50V	IC924	8-759-182-66	IC uPD75316GF-397-3B9	
C950	1-135-259-11	TANTAL. CHIP	10uF 20% 6.3V	IC925	8-759-999-02	IC TL1596CDB	
< CONNECTOR >				IC926	8-759-145-63	IC uPD7564G-540	
CN701	1-691-920-11	CONNECTOR, BOARD TO BOARD 18P		IC927	8-759-069-29	IC uPD6456GS-618	
CN801	1-573-523-21	CONNECTOR, BOARD TO BOARD 16P		< COIL >			
CN851	1-573-930-11	CONNECTOR, FFC/FPC (ZIF) 21P		L701	1-412-006-31	INDUCTOR CHIP	10uH
CN922	1-691-552-11	CONNECTOR, BOARD TO BOARD 48P		L702	1-412-058-11	INDUCTOR CHIP	10uH
CN923	1-573-293-21	PIN, CONNECTOR (1.5MM) (SMD) 2P		L703	1-412-006-31	INDUCTOR CHIP	10uH
CN924	1-573-371-21	CONNECTOR, BOARD TO BOARD 14P		L704	1-412-006-31	INDUCTOR CHIP	10uH
CN925	1-580-056-21	PIN, CONNECTOR 3P		L705	1-412-058-11	INDUCTOR CHIP	10uH
< TRIMMER >				L706	1-412-062-11	INDUCTOR CHIP	47uH
CT801	1-141-356-11	CAP, ADJ		L707	1-412-006-31	INDUCTOR CHIP	10uH
< DIODE >				L708	1-412-006-31	INDUCTOR CHIP	10uH
D923	8-719-404-46	DIODE MA110		L711	1-410-392-11	INDUCTOR CHIP	82uH
D924	8-719-404-46	DIODE MA110		L712	1-412-006-31	INDUCTOR CHIP	10uH
D925	8-719-404-46	DIODE MA110		L714	1-412-052-21	INDUCTOR CHIP	1uH
D927	8-719-404-46	DIODE MA110		L715	1-412-979-21	INDUCTOR	1uH
D930	8-719-421-27	DIODE MA728		L716	1-412-979-21	INDUCTOR	1uH
< FILTER >				L717	1-412-026-11	INDUCTOR CHIP	1uH
FL701	1-236-759-21	FILTER, LOW PASS (TRAP)		L718	1-412-026-11	INDUCTOR CHIP	1uH
FL702	1-415-731-21	DELAY LINE, LC (YH)		L719	1-412-006-31	INDUCTOR CHIP	10uH
FL921	1-406-452-11	COIL, OSC		L720	1-412-006-31	INDUCTOR CHIP	10uH
< IC >				L721	1-410-993-11	INDUCTOR CHIP	1uH
IC701	8-759-044-78	IC AK6420F		L801	1-412-028-11	INDUCTOR CHIP	4.7uH
IC702	8-752-841-57	IC CXP80624-443Q		L802	1-412-006-31	INDUCTOR CHIP	10uH
IC703	8-752-355-56	IC CXD2104BN		L803	1-412-028-11	INDUCTOR CHIP	4.7uH
IC705	8-759-635-27	IC M62352GP		L804	1-412-028-11	INDUCTOR CHIP	4.7uH
IC706	8-759-069-18	IC CXD2103AR		L853	1-412-058-11	INDUCTOR CHIP	10uH
IC707	8-752-340-22	IC CXK5864BTM-12LL		L854	1-412-062-11	INDUCTOR CHIP	47uH
IC708	8-752-347-93	IC CXD2100AQ		L921	1-410-389-31	INDUCTOR CHIP	47uH
IC709	8-759-518-81	IC CXD2112R		L922	1-412-052-21	INDUCTOR CHIP	1uH
IC710	8-752-348-92	IC CXD2101AR		L923	1-412-052-21	INDUCTOR CHIP	1uH
IC711	8-759-243-19	IC TC7SU04F		L924	1-412-058-11	INDUCTOR CHIP	10uH
IC801	8-752-341-09	IC CXD1265R		L926	1-412-006-31	INDUCTOR CHIP	10uH
IC802	8-752-060-50	IC CXA1577R		< IC LINK >			
IC803	8-752-053-26	IC CXA1399Q		△PS921	1-576-122-21	LINK, IC CCP2E10 0.4A	
IC804	8-752-327-48	IC CXD1250N		< TRANSISTOR >			
IC805	8-752-054-61	IC CXA1390AR		Q703	8-729-402-42	TRANSISTOR UN5213	
				Q706	8-729-010-60	TRANSISTOR MSA1586-BC	

The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Q707	8-729-010-60	TRANSISTOR	MSA1586-BC	R756	1-218-837-11	METAL CHIP	390 0.50% 1/16W
Q708	8-729-010-75	TRANSISTOR	MSC4116-B/C	R763	1-218-873-11	METAL CHIP	12K 0.50% 1/16W
Q709	8-729-010-75	TRANSISTOR	MSC4116-B/C				
Q710	8-729-402-84	TRANSISTOR	YN4601	R764	1-218-873-11	METAL CHIP	12K 0.50% 1/16W
Q801	8-729-010-75	TRANSISTOR	MSC4116-B/C	R766	1-216-820-11	METAL CHIP	820 5% 1/16W
Q802	8-729-403-27	TRANSISTOR	YN4401	R767	1-216-827-11	METAL CHIP	3.3K 5% 1/16W
Q853	8-729-010-75	TRANSISTOR	MSC4116-BC	R769	1-216-841-11	METAL CHIP	47K 5% 1/16W
Q854	8-729-907-00	TRANSISTOR	DTC114EU	R770	1-216-821-11	METAL CHIP	1K 5% 1/16W
Q855	8-729-403-27	TRANSISTOR	YN4401	R771	1-216-817-11	METAL CHIP	470 5% 1/16W
Q921	8-729-905-99	TRANSISTOR	DTC114TU	R772	1-216-841-11	METAL CHIP	47K 5% 1/16W
Q922	8-729-905-99	TRANSISTOR	DTC114TU	R773	1-216-827-11	METAL CHIP	3.3K 5% 1/16W
Q923	8-729-907-00	TRANSISTOR	DTC114EU	R774	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
Q925	8-729-403-35	TRANSISTOR	UN5113	R775	1-216-857-11	METAL CHIP	1M 5% 1/16W
Q926	8-729-905-99	TRANSISTOR	DTC114TU	R776	1-216-814-11	METAL CHIP	270 5% 1/16W
Q927	8-729-905-15	TRANSISTOR	DTC144WU	R777	1-216-837-11	METAL CHIP	22K 5% 1/16W
< RESISTOR >				R778	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R701	1-216-833-11	METAL CHIP	10K 5% 1/16W	R779	1-216-821-11	METAL CHIP	1K 5% 1/16W
R702	1-216-833-11	METAL CHIP	10K 5% 1/16W	R780	1-216-821-11	METAL CHIP	1K 5% 1/16W
R703	1-216-841-11	METAL CHIP	47K 5% 1/16W	R783	1-216-309-00	METAL CHIP	5.6 5% 1/10W
R704	1-216-821-11	METAL CHIP	1K 5% 1/16W	R785	1-216-821-11	METAL CHIP	1K 5% 1/16W
R705	1-216-821-11	METAL CHIP	1K 5% 1/16W	R786	1-216-821-11	METAL CHIP	1K 5% 1/16W
R706	1-216-821-11	METAL CHIP	1K 5% 1/16W	R787	1-216-821-11	METAL CHIP	1K 5% 1/16W
R707	1-216-821-11	METAL CHIP	1K 5% 1/16W	R788	1-216-821-11	METAL CHIP	1K 5% 1/16W
R708	1-216-821-11	METAL CHIP	1K 5% 1/16W	R789	1-216-821-11	METAL CHIP	1K 5% 1/16W
R710	1-216-857-11	METAL CHIP	1M 5% 1/16W	R790	1-216-821-11	METAL CHIP	1K 5% 1/16W
R711	1-216-857-11	METAL CHIP	1M 5% 1/16W	R801	1-216-864-11	METAL CHIP	0 5% 1/16W
R712	1-216-841-11	METAL CHIP	47K 5% 1/16W	R802	1-216-835-11	METAL CHIP	15K 5% 1/16W
R720	1-216-821-11	METAL CHIP	1K 5% 1/16W	R803	1-216-823-11	METAL CHIP	1.5K 5% 1/16W
R721	1-216-821-11	METAL CHIP	1K 5% 1/16W	R804	1-216-833-11	METAL CHIP	10K 5% 1/16W
R726	1-216-833-11	METAL CHIP	10K 5% 1/16W	R805	1-216-845-11	METAL CHIP	100K 5% 1/16W
R730	1-216-842-11	METAL CHIP	56K 5% 1/16W	R808	1-216-801-11	METAL CHIP	22 5% 1/16W
R732	1-216-864-11	METAL CHIP	0 5% 1/16W	R809	1-216-833-11	METAL CHIP	10K 5% 1/16W
R734	1-216-814-11	METAL CHIP	270 5% 1/16W	R810	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
R735	1-216-857-11	METAL CHIP	1M 5% 1/16W	R812	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
R736	1-216-841-11	METAL CHIP	47K 5% 1/16W	R813	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
R737	1-216-837-11	METAL CHIP	22K 5% 1/16W	R814	1-216-837-11	METAL CHIP	22K 5% 1/16W
R738	1-216-863-11	METAL GLAZE	3.3M 5% 1/16W	R819	1-216-805-11	METAL CHIP	47 5% 1/16W
R739	1-216-857-11	METAL CHIP	1M 5% 1/16W	R821	1-216-859-11	METAL GLAZE	1.5M 5% 1/16W
R740	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	R823	1-218-876-11	METAL CHIP	16K 0.50% 1/16W
R741	1-216-864-11	METAL CHIP	0 5% 1/16W	R825	1-216-832-11	METAL CHIP	8.2K 5% 1/16W
R743	1-216-821-11	METAL CHIP	1K 5% 1/16W	R830	1-218-847-11	METAL CHIP	1K 0.50% 1/16W
R745	1-216-840-11	METAL CHIP	39K 5% 1/16W	R831	1-216-818-11	METAL CHIP	560 5% 1/16W
R746	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	R832	1-216-841-11	METAL CHIP	47K 5% 1/16W
R747	1-216-845-11	METAL CHIP	100K 5% 1/16W	R833	1-216-841-11	METAL CHIP	47K 5% 1/16W
R748	1-216-837-11	METAL CHIP	22K 5% 1/16W	R835	1-216-823-11	METAL CHIP	1.5K 5% 1/16W
R749	1-216-839-11	METAL CHIP	33K 5% 1/16W	R851	1-216-182-00	METAL GLAZE	220 5% 1/8W
R750	1-216-815-11	METAL CHIP	330 5% 1/16W	R853	1-216-821-11	METAL CHIP	1K 5% 1/16W
R751	1-216-833-11	METAL CHIP	10K 5% 1/16W	R854	1-216-833-11	METAL CHIP	10K 5% 1/16W
R755	1-218-837-11	METAL CHIP	390 0.50% 1/16W	R855	1-216-839-11	METAL CHIP	33K 5% 1/16W
				R856	1-216-839-11	METAL CHIP	33K 5% 1/16W
				R857	1-216-837-11	METAL CHIP	22K 5% 1/16W

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
R858	1-216-837-11	METAL CHIP	22K	5%	1/16W	R957	1-216-833-11	METAL CHIP	10K	5%	1/16W
R859	1-216-845-11	METAL CHIP	100K	5%	1/16W	R958	1-216-821-11	METAL CHIP	1K	5%	1/16W
R860	1-216-833-11	METAL CHIP	10K	5%	1/16W	R960	1-216-833-11	METAL CHIP	10K	5%	1/16W
R861	1-216-833-11	METAL CHIP	10K	5%	1/16W	R961	1-216-841-11	METAL CHIP	47K	5%	1/16W
R862	1-216-837-11	METAL CHIP	22K	5%	1/16W	R962	1-216-821-11	METAL CHIP	1K	5%	1/16W
R863	1-216-837-11	METAL CHIP	22K	5%	1/16W	R963	1-216-833-11	METAL CHIP	10K	5%	1/16W
R864	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	R964	1-216-845-11	METAL CHIP	100K	5%	1/16W
R865	1-216-820-11	METAL CHIP	820	5%	1/16W	R965	1-216-841-11	METAL CHIP	47K	5%	1/16W
R867	1-216-821-11	METAL CHIP	1K	5%	1/16W	R966	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R868	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	R967	1-216-809-11	METAL CHIP	100	5%	1/16W
R869	1-216-848-11	METAL CHIP	180K	5%	1/16W	R968	1-216-809-11	METAL CHIP	100	5%	1/16W
R870	1-216-841-11	METAL CHIP	47K	5%	1/16W	R969	1-216-809-11	METAL CHIP	100	5%	1/16W
R872	1-216-848-11	METAL CHIP	180K	5%	1/16W	< NETWORK >					
R873	1-216-851-11	METAL CHIP	330K	5%	1/16W	RB701	1-236-432-11	NETWORK, RES 47K			
R874	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	RB921	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)			
R875	1-216-842-11	METAL CHIP	56K	5%	1/16W	RB922	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)			
R876	1-216-816-11	METAL CHIP	390	5%	1/16W	RB923	1-236-432-11	NETWORK, RES 47K			
R877	1-216-134-00	METAL CHIP	2.2	5%	1/8W	RB924	1-236-412-11	NETWORK, RES 1.0K			
R878	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	RB925	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)			
R879	1-216-821-11	METAL CHIP	1K	5%	1/16W	RB926	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)			
R880	1-216-821-11	METAL CHIP	1K	5%	1/16W	RB927	1-236-908-11	RESISTOR, NETWORK (CHIP TYPE)			
R910	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	RB928	1-236-908-11	RESISTOR, NETWORK (CHIP TYPE)			
R911	1-216-845-11	METAL CHIP	100K	5%	1/16W	RB929	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)			
R921	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	RB930	1-236-907-11	RESISTOR, NETWORK (CHIP TYPE)			
R922	1-216-821-11	METAL CHIP	1K	5%	1/16W	RB931	1-236-907-11	RESISTOR, NETWORK (CHIP TYPE)			
R924	1-216-821-11	METAL CHIP	1K	5%	1/16W	RB932	1-236-405-11	NETWORK, RES 270			
R925	1-216-813-11	METAL CHIP	220	5%	1/16W	RB935	1-236-416-11	NETWORK, RES 2.2K			
R926	1-216-813-11	METAL CHIP	220	5%	1/16W	RB937	1-236-432-11	NETWORK, RES 47K			
R927	1-216-821-11	METAL CHIP	1K	5%	1/16W	< FLEXIBLE BOARD >					
R929	1-216-821-11	METAL CHIP	1K	5%	1/16W	W701	1-642-240-11	FP-518 FLEXIBLE BOARD			
R930	1-216-813-11	METAL CHIP	220	5%	1/16W	W926	1-642-235-11	FP-481 FLEXIBLE BOARD			
R931	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	< VIBRATOR >					
R932	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	X701	1-579-553-11	VIBRATOR (10MHz)			
R933	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	X801	1-579-621-11	VIBRATOR, CRYSTAL (28.375MHz)			
R934	1-216-813-11	METAL CHIP	220	5%	1/16W	X921	1-579-063-21	VIBRATOR, CERAMIC (4.19MHz)			
R936	1-216-841-11	METAL CHIP	47K	5%	1/16W	X922	1-579-550-11	VIBRATOR, CRYSTAL (32kHz)			
R942	1-216-841-11	METAL CHIP	47K	5%	1/16W	X923	1-579-551-11	VIBRATOR, CERAMIC (700kHz)			
R943	1-216-845-11	METAL CHIP	100K	5%	1/16W	*****					
R944	1-216-841-11	METAL CHIP	47K	5%	1/16W	* A-7063-664-A VD-22P BOARD, COMPLETE					
R945	1-218-857-11	METAL CHIP	2.7K	0.50%	1/16W	*****					
R946	1-216-821-11	METAL CHIP	1K	5%	1/16W	(Ref. No. 1,000 Series)					
R947	1-216-851-11	METAL CHIP	330K	5%	1/16W	< CAPACITOR >					
R948	1-216-821-11	METAL CHIP	1K	5%	1/16W	C001	1-135-170-21	TANTALUM CHIP	6.8uF	20%	4V
R949	1-216-821-11	METAL CHIP	1K	5%	1/16W	C002	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
R950	1-216-833-11	METAL CHIP	10K	5%	1/16W	C003	1-164-360-11	CERAMIC CHIP	0.1uF		16V
R951	1-216-809-11	METAL CHIP	100	5%	1/16W	C004	1-164-360-11	CERAMIC CHIP	0.1uF		16V
R952	1-216-833-11	METAL CHIP	10K	5%	1/16W						
R953	1-216-841-11	METAL CHIP	47K	5%	1/16W						
R954	1-216-814-11	METAL CHIP	270	5%	1/16W						
R955	1-216-817-11	METAL CHIP	470	5%	1/16W						

VD-22P

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C005	1-163-809-11	CERAMIC CHIP	0.047uF 10% 25V	Q003	8-729-402-42	TRANSISTOR UN5213	
C006	1-163-809-11	CERAMIC CHIP	0.047uF 10% 25V	< RESISTOR >			
C007	1-162-967-11	CERAMIC CHIP	0.0033uF 10% 50V	R001	1-216-031-00	METAL CHIP	180 5% 1/10W
C008	1-162-967-11	CERAMIC CHIP	0.0033uF 10% 50V	R002	1-218-871-11	METAL CHIP	10K 0.50% 1/16W
C009	1-163-037-11	CERAMIC CHIP	0.022uF 10% 25V	R003	1-218-871-11	METAL CHIP	10K 0.50% 1/16W
C010	1-163-037-11	CERAMIC CHIP	0.022uF 10% 25V	R004	1-218-895-11	METAL CHIP	100K 0.50% 1/16W
C011	1-163-037-11	CERAMIC CHIP	0.022uF 10% 25V	R005	1-218-851-11	METAL CHIP	1.5K 0.50% 1/16W
C012	1-163-037-11	CERAMIC CHIP	0.022uF 10% 25V	R006	1-218-863-11	METAL CHIP	4.7K 0.50% 1/16W
C013	1-163-037-11	CERAMIC CHIP	0.022uF 10% 25V	R007	1-218-891-11	METAL CHIP	68K 0.50% 1/16W
C014	1-135-201-11	TANTALUM CHIP	10uF 20% 4V	R008	1-216-837-11	METAL CHIP	22K 5% 1/16W
C017	1-135-149-21	TANTALUM CHIP	2.2uF 20% 10V	R009	1-216-837-11	METAL CHIP	22K 5% 1/16W
C018	1-162-974-11	CERAMIC CHIP	0.01uF 50V	R010	1-216-837-11	METAL CHIP	22K 5% 1/16W
C019	1-162-974-11	CERAMIC CHIP	0.01uF 50V	R011	1-216-837-11	METAL CHIP	22K 5% 1/16W
C020	1-135-091-91	TANTAL. CHIP	1uF 20% 16V	R012	1-218-891-11	METAL CHIP	68K 0.50% 1/16W
C021	1-164-222-11	CERAMIC CHIP	0.22uF 25V	R013	1-218-871-11	METAL CHIP	10K 0.50% 1/16W
C022	1-135-181-21	TANTALUM CHIP	4.7uF 20% 6.3V	R014	1-218-871-11	METAL CHIP	10K 0.50% 1/16W
C023	1-162-974-11	CERAMIC CHIP	0.01uF 50V	R015	1-218-895-11	METAL CHIP	100K 0.50% 1/16W
C024	1-135-181-21	TANTALUM CHIP	4.7uF 20% 6.3V	R016	1-218-851-11	METAL CHIP	1.5K 0.50% 1/16W
C025	1-135-211-11	TANTAL. CHIP	6.8uF 20% 6.3V	R017	1-218-895-11	METAL CHIP	100K 0.50% 1/16W
C027	1-135-211-11	TANTAL. CHIP	6.8uF 20% 6.3V	R018	1-218-895-11	METAL CHIP	100K 0.50% 1/16W
C028	1-164-360-11	CERAMIC CHIP	0.1uF 16V	R019	1-218-863-11	METAL CHIP	4.7K 0.50% 1/16W
C029	1-164-343-11	CERAMIC CHIP	0.056uF 10% 25V	R020	1-218-895-11	METAL CHIP	100K 0.50% 1/16W
C030	1-164-343-11	CERAMIC CHIP	0.056uF 10% 25V	R021	1-218-903-11	METAL CHIP	220K 0.50% 1/16W
C033	1-163-809-11	CERAMIC CHIP	0.047uF 10% 25V	R022	1-218-903-11	METAL CHIP	220K 0.50% 1/16W
C034	1-163-809-11	CERAMIC CHIP	0.047uF 10% 25V	R023	1-218-895-11	METAL CHIP	100K 0.50% 1/16W
C035	1-162-974-11	CERAMIC CHIP	0.01uF 50V	R024	1-218-887-11	METAL CHIP	47K 0.50% 1/16W
< CONNECTOR >				R025	1-218-887-11	METAL CHIP	47K 0.50% 1/16W
CN001	1-691-536-11	CONNECTOR, BOARD TO BOARD 24P		R029	1-216-833-11	METAL CHIP	10K 5% 1/16W
CN002	1-691-513-11	CONNECTOR, BOARD TO BOARD 12P		R030	1-216-837-11	METAL CHIP	22K 5% 1/16W
CN003	1-580-057-11	PIN, CONNECTOR 4P		R031	1-216-837-11	METAL CHIP	22K 5% 1/16W
< IC >				R032	1-216-821-11	METAL CHIP	1K 5% 1/16W
IC001	8-759-701-24	IC NJM3414M		R033	1-216-821-11	METAL CHIP	1K 5% 1/16W
IC002	8-759-998-96	IC LM324D		R034	1-216-821-11	METAL CHIP	1K 5% 1/16W
IC003	8-759-981-75	IC RC3403AM		R035	1-216-821-11	METAL CHIP	1K 5% 1/16W
IC004	8-759-701-24	IC NJM3414M		R036	1-216-821-11	METAL CHIP	1K 5% 1/16W
IC005	8-759-058-98	IC SC370605D		R037	1-216-821-11	METAL CHIP	1K 5% 1/16W
IC006	8-752-839-91	IC CXP80620-425Q		R038	1-216-821-11	METAL CHIP	1K 5% 1/16W
IC007	8-759-500-11	IC MM1036XF		R039	1-216-821-11	METAL CHIP	1K 5% 1/16W
< COIL >				R040	1-216-833-11	METAL CHIP	10K 5% 1/16W
L001	1-412-006-31	INDUCTOR CHIP	10uH	R041	1-216-833-11	METAL CHIP	10K 5% 1/16W
L002	1-412-006-31	INDUCTOR CHIP	10uH	R042	1-216-833-11	METAL CHIP	10K 5% 1/16W
L003	1-412-058-11	INDUCTOR CHIP	10uH	R044	1-216-833-11	METAL CHIP	10K 5% 1/16W
L004	1-412-006-31	INDUCTOR CHIP	10uH	R045	1-216-840-11	METAL CHIP	39K 5% 1/16W
< TRANSISTOR >				R047	1-216-814-11	METAL CHIP	270 5% 1/16W
Q001	8-729-920-99	TRANSISTOR DTA114EU		R052	1-216-857-11	METAL CHIP	1M 5% 1/16W
Q002	8-729-402-78	TRANSISTOR XN6401		R053	1-216-828-11	METAL CHIP	3.9K 5% 1/16W
				R054	1-216-833-11	METAL CHIP	10K 5% 1/16W
				R055	1-216-789-11	METAL CHIP	2.2 5% 1/16W
				R056	1-216-821-11	METAL CHIP	1K 5% 1/16W

Ref.No.	Part No.	Description	Remark
R057	1-218-843-11	METAL CHIP 680 0.50% 1/16W	
R058	1-218-843-11	METAL CHIP 680 0.50% 1/16W	
< VIBRATOR >			
X001	1-579-553-11	VIBRATOR (12MHz)	

*	A-7063-220-A	VF-42P BOARD, COMPLETE	

		(Ref.No. 8,000 Series)	
	3-942-888-01	HOLDER, LED	
< CAPACITOR >			
C501	1-126-176-11	ELECT 220uF 20% 10V	
C502	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V	
C503	1-163-109-00	CERAMIC CHIP 47PF 5% 50V	
△C504	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
△C505	1-164-758-11	CERAMIC CHIP 0.0039uF 5% 50V	
△C506	1-164-715-11	CERAMIC CHIP 0.0068uF 5% 50V	
C507	1-127-515-11	ELECT(SOLID) 47uF 20% 6.3V	
C508	1-164-611-11	CERAMIC CHIP 0.001uF 10% 500V	
C509	1-124-257-00	ELECT 2.2uF 20% 50V	
C510	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C511	1-126-090-11	ELECT 82uF 20% 10V	
C512	1-137-306-11	FILM CHIP 0.1uF 5% 16V	
C513	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C514	1-131-381-00	TANTALUM 47uF 10% 10V	
C515	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C516	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
< CONNECTOR >			
* CN501	1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P	
* CN502	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
* CN503	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
< DIODE >			
D501	8-719-820-65	DIODE TLS221	
D502	8-719-984-02	LED BR4371F	
D503	8-719-400-20	DIODE MA152WA	
< IC >			
IC501	8-759-420-01	IC AN2512S	
< COIL >			
L501	1-408-976-21	INDUCTOR 33uH	
L502	1-408-785-21	INDUCTOR CHIP 47uH	
△L503	1-459-876-41	COIL, FERRITE (HLC)	

Ref.No.	Part No.	Description	Remark
< TRANSISTOR >			
Q501	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q502	8-729-216-31	TRANSISTOR 2SA1163-G	
Q504	8-729-106-68	TRANSISTOR 2SD1615A-GP	
< RESISTOR >			
R501	1-216-033-00	METAL CHIP 220 5% 1/10W	
R502	1-216-041-00	METAL CHIP 470 5% 1/10W	
R503	1-216-041-00	METAL CHIP 470 5% 1/10W	
R506	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R507	1-216-047-00	METAL CHIP 820 5% 1/10W	
R508	1-216-689-11	METAL CHIP 39K 0.5% 1/10W	
R509	1-216-689-11	METAL CHIP 39K 0.5% 1/10W	
R510	1-216-005-00	METAL CHIP 15 5% 1/10W	
R511	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R512	1-216-131-11	METAL CHIP 2.7M 5% 1/10W	
R513	1-216-101-00	METAL CHIP 150K 5% 1/10W	
R514	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R515	1-216-131-11	METAL CHIP 2.7M 5% 1/10W	
R516	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R517	1-216-025-00	METAL CHIP 100 5% 1/10W	
R518	1-216-308-00	METAL CHIP 4.7 5% 1/10W	
R519	1-216-336-11	METAL CHIP 47K 1% 1/10W	
R520	1-216-107-00	METAL CHIP 270K 5% 1/10W	
R521	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R522	1-216-160-00	METAL GLAZE 27 5% 1/8W	
R523	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R524	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R525	1-216-097-00	METAL CHIP 100K 5% 1/10W	
< VARIABLE RESISTOR >			
RV501	1-241-596-11	RES, ADJ, METAL GRAZE 47K	
RV502	1-241-590-11	RES, ADJ, METAL GRAZE 470	
RV503	1-241-592-11	RES, ADJ, METAL GRAZE 2.2K	
RV504	1-228-762-00	RES, ADJ, METAL GLAZE 1M	
< TRASFORMER >			
△T501	1-439-486-11	TRANSFORMER ASSY, FLYBACK	
< THERMISTOR >			
TH501	1-809-350-21	THERMISTOR, NTC (2125)	
< SOCKET >			
△W501	1-540-019-21	SOCKET ASSY, CRT	

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
*	A-7063-660-A	VS-101 BOARD, COMPLETE ***** (Ref. No. 3,000 Series)		C049	1-164-360-11	CERAMIC CHIP	0.1uF 16V
				C050	1-135-157-21	TANTALUM CHIP	10uF 20% 6.3V
				C051	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
	1-630-591-11	FP-182 FLEXIBLE BOARD		C052	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
*	3-946-452-01	CASE (UPPER), SHIELD, RP		C053	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V
*	3-946-453-01	CASE (LOWER), SHIELD, RP		C054	1-163-809-11	CERAMIC CHIP	0.047uF 10% 25V
		< CAPACITOR >		C055	1-163-809-11	CERAMIC CHIP	0.047uF 10% 25V
				C056	1-164-360-11	CERAMIC CHIP	0.1uF 16V
C002	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C057	1-164-360-11	CERAMIC CHIP	0.1uF 16V
C003	1-162-927-11	CERAMIC CHIP	100PF 5% 50V	C058	1-164-360-11	CERAMIC CHIP	0.1uF 16V
C004	1-162-926-11	CERAMIC CHIP	82PF 5% 50V	C059	1-164-360-11	CERAMIC CHIP	0.1uF 16V
C005	1-162-927-11	CERAMIC CHIP	100PF 5% 50V	C060	1-164-360-11	CERAMIC CHIP	0.1uF 16V
C006	1-164-217-11	CERAMIC CHIP	150PF 5% 50V	C061	1-135-259-11	TANTAL. CHIP	10uF 20% 6.3V
C008	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C062	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C009	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C071	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C011	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C072	1-162-917-11	CERAMIC CHIP	15PF 5% 50V
C012	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C073	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C013	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C074	1-164-360-11	CERAMIC CHIP	0.1uF 16V
C014	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C075	1-135-259-11	TANTAL. CHIP	10uF 20% 6.3V
C015	1-163-809-11	CERAMIC CHIP	0.047uF 10% 25V	C076	1-162-917-11	CERAMIC CHIP	15PF 5% 50V
C016	1-163-809-11	CERAMIC CHIP	0.047uF 10% 25V	C077	1-162-921-11	CERAMIC CHIP	33PF 5% 50V
C017	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C078	1-164-145-11	CERAMIC CHIP	390PF 5% 50V
C018	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C079	1-162-976-11	CERAMIC CHIP	75PF 5% 50V
C019	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	C080	1-162-919-11	CERAMIC CHIP	22PF 5% 50V
C020	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C081	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C021	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C082	1-162-923-11	CERAMIC CHIP	47PF 5% 50V
C022	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C083	1-162-928-11	CERAMIC CHIP	120PF 5% 50V
C023	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C084	1-162-909-11	CERAMIC CHIP	4PF 0.25PF 50V
C024	1-135-157-21	TANTALUM CHIP	10uF 20% 6.3V	C085	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V
C025	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C086	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C026	1-135-259-11	TANTAL. CHIP	10uF 20% 6.3V	C087	1-164-505-11	CERAMIC CHIP	2.2uF 16V
C027	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C088	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C028	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	C089	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C029	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C090	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C030	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C091	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C031	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C092	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C032	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C094	1-164-505-11	CERAMIC CHIP	2.2uF 16V
C034	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	C095	1-162-919-11	CERAMIC CHIP	22PF 5% 50V
C035	1-135-157-21	TANTALUM CHIP	10uF 20% 6.3V	C096	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C036	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C097	1-162-925-11	CERAMIC CHIP	68PF 5% 50V
C037	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	C098	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C038	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C099	1-162-925-11	CERAMIC CHIP	68PF 5% 50V
C039	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	C100	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C040	1-135-157-21	TANTALUM CHIP	10uF 20% 6.3V	C102	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C041	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	C103	1-162-925-11	CERAMIC CHIP	68PF 5% 50V
C043	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C104	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V
C044	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C105	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V
C046	1-135-157-21	TANTALUM CHIP	10uF 20% 6.3V	C106	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C047	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C107	1-162-921-11	CERAMIC CHIP	33PF 5% 50V
C048	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	C108	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V

Ref.No.	Part No.	Description	Remark			Ref.No.	Part No.	Description	Remark		
C109	1-162-958-11	CERAMIC CHIP	270PF	5%	50V	C178	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C110	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C179	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C111	1-164-383-11	CERAMIC CHIP	110PF	5%	50V	C180	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C113	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V	C181	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C114	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	C182	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C115	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	C183	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C116	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C184	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C117	1-162-922-11	CERAMIC CHIP	39PF	5%	50V	C188	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C119	1-164-361-11	CERAMIC CHIP	0.047uF		16V	C189	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C120	1-164-361-11	CERAMIC CHIP	0.047uF		16V	C191	1-164-634-11	CERAMIC CHIP	1uF		16V
C121	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V	C192	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C122	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	C193	1-164-634-11	CERAMIC CHIP	1uF		16V
C123	1-164-361-11	CERAMIC CHIP	0.047uF		16V	C194	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C124	1-162-947-11	CERAMIC CHIP	33PF	5%	50V	C195	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C125	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C197	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C126	1-162-921-11	CERAMIC CHIP	33PF	5%	50V	C198	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C127	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C199	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C128	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C201	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C129	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V	C202	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C130	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	C203	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C131	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C204	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C132	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C205	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C133	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C206	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C134	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V	C207	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C135	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	C208	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C136	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C209	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C151	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	C210	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C154	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C211	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C155	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	C212	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C156	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C213	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C158	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	C214	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C159	1-135-091-91	TANTAL. CHIP	1uF	20%	16V	C215	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C160	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	C216	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V
C161	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	C219	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C162	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C220	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C163	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V	C221	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C164	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V	C222	1-164-634-11	CERAMIC CHIP	1uF		16V
C165	1-164-634-11	CERAMIC CHIP	1uF		16V	C223	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C166	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V	C224	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C167	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	C225	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C168	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	C226	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C169	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	C227	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C170	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	C261	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C171	1-162-914-11	CERAMIC CHIP	9PF	0.5PF	50V	C262	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C172	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C263	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C173	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C264	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C174	1-162-916-11	CERAMIC CHIP	12PF	5%	50V	C265	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C175	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C266	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C176	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C267	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C177	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	C268	1-164-360-11	CERAMIC CHIP	0.1uF		16V

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
C269	1-164-360-11	CERAMIC CHIP	0. 1uF		16V	C359	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C270	1-162-926-11	CERAMIC CHIP	82PF	5%	50V	C360	1-162-964-11	CERAMIC CHIP	0. 001uF	10%	50V
C271	1-162-968-11	CERAMIC CHIP	0. 0047uF	10%	50V	C361	1-135-181-21	TANTALUM CHIP	4. 7uF	20%	6. 3V
C273	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	C362	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C274	1-163-809-11	CERAMIC CHIP	0. 047uF	10%	25V	C363	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C275	1-163-809-11	CERAMIC CHIP	0. 047uF	10%	25V	C370	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C276	1-164-361-11	CERAMIC CHIP	0. 047uF		16V	C401	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C277	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	C402	1-135-259-11	TANTAL. CHIP	10uF	20%	6. 3V
C278	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	C403	1-164-005-11	CERAMIC CHIP	0. 47uF		25V
C279	1-164-360-11	CERAMIC CHIP	0. 1uF		16V	C404	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C280	1-164-361-11	CERAMIC CHIP	0. 047uF		16V	C405	1-164-005-11	CERAMIC CHIP	0. 47uF		25V
C281	1-135-181-21	TANTALUM CHIP	4. 7uF	20%	6. 3V	C406	1-164-634-11	CERAMIC CHIP	1uF		16V
C282	1-164-360-11	CERAMIC CHIP	0. 1uF		16V	C407	1-164-005-11	CERAMIC CHIP	0. 47uF		25V
C283	1-162-974-11	CERAMIC CHIP	0. 01uF		50V	C408	1-135-259-11	TANTAL. CHIP	10uF	20%	6. 3V
C292	1-162-964-11	CERAMIC CHIP	0. 001uF	10%	50V	C409	1-135-149-21	TANTALUM CHIP	2. 2uF	20%	10V
C293	1-162-964-11	CERAMIC CHIP	0. 001uF	10%	50V	C410	1-135-259-11	TANTAL. CHIP	10uF	20%	6. 3V
C301	1-135-259-11	TANTAL. CHIP	10uF	20%	6. 3V	C411	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C302	1-162-974-11	CERAMIC CHIP	0. 01uF		50V	C412	1-126-246-11	ELECT CHIP	220uF	20%	4V
C303	1-164-005-11	CERAMIC CHIP	0. 47uF		25V	C413	1-164-182-11	CERAMIC CHIP	0. 0033uF	10%	50V
C304	1-162-974-11	CERAMIC CHIP	0. 01uF		50V	C415	1-135-259-11	TANTAL. CHIP	10uF	20%	6. 3V
C305	1-164-634-11	CERAMIC CHIP	1uF		16V	C416	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C306	1-164-360-11	CERAMIC CHIP	0. 1uF		16V	C417	1-164-360-11	CERAMIC CHIP	0. 1uF		16V
C307	1-164-005-11	CERAMIC CHIP	0. 47uF		25V	C418	1-164-471-11	CERAMIC CHIP	680PF	5%	50V
C308	1-162-971-11	CERAMIC CHIP	0. 001uF		50V	C419	1-135-318-11	TANTAL. CHIP	33uF	20%	4V
C309	1-164-360-11	CERAMIC CHIP	0. 1uF		16V	C420	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C310	1-162-974-11	CERAMIC CHIP	0. 01uF		50V	C421	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C311	1-135-259-11	TANTAL. CHIP	10uF	20%	6. 3V	C422	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C312	1-135-149-21	TANTALUM CHIP	2. 2uF	20%	10V	C423	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C313	1-126-246-11	ELECT CHIP	220uF	20%	4V	C424	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C314	1-162-971-11	CERAMIC CHIP	0. 001uF		50V	C425	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C315	1-162-971-11	CERAMIC CHIP	0. 001uF		50V	C426	1-164-005-11	CERAMIC CHIP	0. 47uF		25V
C316	1-164-005-11	CERAMIC CHIP	0. 47uF		25V	C427	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C317	1-162-915-11	CERAMIC CHIP	10PF	0. 5PF	50V	C428	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C319	1-162-974-11	CERAMIC CHIP	0. 01uF		50V	C429	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C320	1-135-259-11	TANTAL. CHIP	10uF	20%	6. 3V	C430	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C321	1-135-259-11	TANTAL. CHIP	10uF	20%	6. 3V	C431	1-162-942-11	CERAMIC CHIP	12PF	5%	50V
C322	1-164-360-11	CERAMIC CHIP	0. 1uF		16V	C432	1-135-259-11	TANTAL. CHIP	10uF	20%	6. 3V
C323	1-162-964-11	CERAMIC CHIP	0. 001uF	10%	50V	C433	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C324	1-164-222-11	CERAMIC CHIP	0. 22uF		25V	C434	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C325	1-164-005-11	CERAMIC CHIP	0. 47uF		25V	C435	1-135-259-11	TANTAL. CHIP	10uF	20%	6. 3V
C326	1-162-974-11	CERAMIC CHIP	0. 01uF		50V	C436	1-135-180-21	TANTALUM CHIP	3. 3uF	20%	6. 3V
C327	1-164-634-11	CERAMIC CHIP	1uF		16V	C437	1-135-259-11	TANTAL. CHIP	10uF	20%	6. 3V
C351	1-162-974-11	CERAMIC CHIP	0. 01uF		50V	C438	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C352	1-162-917-11	CERAMIC CHIP	15PF	5%	50V	C439	1-135-180-21	TANTALUM CHIP	3. 3uF	20%	6. 3V
C353	1-135-211-11	TANTAL. CHIP	6. 8uF	20%	6. 3V	C440	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C354	1-162-974-11	CERAMIC CHIP	0. 01uF		50V	C441	1-162-941-11	CERAMIC CHIP	10PF	0. 5PF	50V
C355	1-135-091-91	TANTAL. CHIP	1uF	20%	16V	C442	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C356	1-162-965-11	CERAMIC CHIP	0. 0015uF	10%	50V	C443	1-162-946-11	CERAMIC CHIP	27PF	5%	50V
C357	1-135-091-91	TANTAL. CHIP	1uF	20%	16V	C444	1-162-956-11	CERAMIC CHIP	180PF	5%	50V
C358	1-162-974-11	CERAMIC CHIP	0. 01uF		50V	C445	1-162-954-11	CERAMIC CHIP	120PF	5%	50V

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C446	1-162-946-11	CERAMIC CHIP	27PF 5% 50V	C526	1-135-259-11	TANTAL. CHIP	10uF 20% 6.3V
C447	1-135-151-21	TANTALUM CHIP	4.7uF 20% 4V	C527	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C449	1-162-947-11	CERAMIC CHIP	33PF 5% 50V	C528	1-162-945-11	CERAMIC CHIP	22PF 5% 50V
C450	1-163-131-00	CERAMIC CHIP	390PF 5% 50V	C529	1-162-941-11	CERAMIC CHIP	10PF 0.5PF 50V
C451	1-163-263-11	CERAMIC CHIP	330PF 5% 50V	C530	1-162-912-11	CERAMIC CHIP	7PF 0.5PF 50V
C452	1-163-121-00	CERAMIC CHIP	150PF 5% 50V	C531	1-162-910-11	CERAMIC CHIP	5PF 0.25PF 50V
C453	1-163-121-00	CERAMIC CHIP	150PF 5% 50V	C532	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C454	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C533	1-162-944-11	CERAMIC CHIP	18PF 5% 50V
C455	1-135-259-11	TANTAL. CHIP	10uF 20% 6.3V	C534	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C456	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C535	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C457	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C538	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C458	1-162-956-11	CERAMIC CHIP	180PF 5% 50V	C552	1-135-180-21	TANTALUM CHIP	3.3uF 20% 6.3V
C459	1-162-949-11	CERAMIC CHIP	47PF 5% 50V	C553	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C460	1-135-201-11	TANTALUM CHIP	10uF 20% 4V	C554	1-135-180-21	TANTALUM CHIP	3.3uF 20% 6.3V
C461	1-135-151-21	TANTALUM CHIP	4.7uF 20% 4V	C555	1-164-360-11	CERAMIC CHIP	0.1uF 16V
C462	1-162-957-11	CERAMIC CHIP	220PF 5% 50V	C556	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C463	1-162-957-11	CERAMIC CHIP	220PF 5% 50V	C557	1-135-180-21	TANTALUM CHIP	3.3uF 20% 6.3V
C464	1-162-918-11	CERAMIC CHIP	18PF 5% 50V	C558	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C465	1-164-145-11	CERAMIC CHIP	390PF 5% 50V	C559	1-164-634-11	CERAMIC CHIP	1uF 16V
C466	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C560	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C467	1-135-201-11	TANTALUM CHIP	10uF 20% 4V	C561	1-135-201-11	TANTALUM CHIP	10uF 20% 4V
C468	1-135-201-11	TANTALUM CHIP	10uF 20% 4V	C562	1-162-949-11	CERAMIC CHIP	47PF 5% 50V
C469	1-135-201-11	TANTALUM CHIP	10uF 20% 4V	C563	1-162-953-11	CERAMIC CHIP	100PF 5% 50V
C470	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C564	1-135-201-11	TANTALUM CHIP	10uF 20% 4V
C471	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C566	1-135-180-21	TANTALUM CHIP	3.3uF 20% 6.3V
C472	1-135-259-11	TANTAL. CHIP	10uF 20% 6.3V	C567	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C473	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C568	1-135-180-21	TANTALUM CHIP	3.3uF 20% 6.3V
C474	1-135-201-11	TANTALUM CHIP	10uF 20% 4V	C569	1-164-360-11	CERAMIC CHIP	0.1uF 16V
C475	1-162-948-11	CERAMIC CHIP	39PF 5% 50V	C570	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C476	1-162-918-11	CERAMIC CHIP	18PF 5% 50V	C571	1-135-180-21	TANTALUM CHIP	3.3uF 20% 6.3V
C499	1-162-947-11	CERAMIC CHIP	33PF 5% 50V	C572	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C502	1-162-971-11	CERAMIC CHIP	0.001uF 50V	C573	1-164-634-11	CERAMIC CHIP	1uF 16V
C504	1-164-217-11	CERAMIC CHIP	150PF 5% 50V	C574	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C505	1-162-949-11	CERAMIC CHIP	47PF 5% 50V	C575	1-135-201-11	TANTALUM CHIP	10uF 20% 4V
C506	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C576	1-162-947-11	CERAMIC CHIP	33PF 5% 50V
C507	1-162-967-11	CERAMIC CHIP	0.0033uF 10% 50V	C577	1-135-201-11	TANTALUM CHIP	10uF 20% 4V
C508	1-162-952-11	CERAMIC CHIP	82PF 5% 50V	C578	1-164-360-11	CERAMIC CHIP	0.1uF 16V
C509	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C579	1-164-360-11	CERAMIC CHIP	0.1uF 16V
C511	1-162-951-11	CERAMIC CHIP	68PF 5% 50V	C590	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C512	1-162-950-11	CERAMIC CHIP	56PF 5% 50V	< CONNECTOR >			
C513	1-162-957-11	CERAMIC CHIP	220PF 5% 50V	CN001	1-566-531-11	CONNECTOR, FPC (ZIF) 15P	
C514	1-162-953-11	CERAMIC CHIP	100PF 5% 50V	CN151	1-573-293-21	PIN, CONNECTOR (1.5MM) (SMD) 2P	
C515	1-162-974-11	CERAMIC CHIP	0.01uF 50V	CN152	1-569-363-21	CONNECTOR, FPC 15P	
C517	1-164-360-11	CERAMIC CHIP	0.1uF 16V	CN153	1-566-538-11	CONNECTOR, FPC (NON ZIF) 6P	
C518	1-135-163-21	TANTAL. CHIP	47uF 20% 4V	CN154	1-566-541-11	CONNECTOR, FPC (NON ZIF) 9P	
C521	1-162-969-11	CERAMIC CHIP	0.0068uF 10% 25V	CN301	1-565-878-11	PIN, CONNECTOR (PC BOARD) 6P	
C522	1-135-091-91	TANTAL. CHIP	1uF 20% 16V	CN502	1-565-662-11	CONNECTOR (PC BOARD) 15P	
C523	1-135-091-91	TANTAL. CHIP	1uF 20% 16V				
C524	1-135-176-21	TANTALUM CHIP	0.68uF 10% 20V				
C525	1-162-995-11	CERAMIC CHIP	0.022uF 50V				

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
< DIODE >							
D071	8-719-404-46	DIODE MA110		IC304	8-759-635-27	IC M62352GP	
D072	8-719-800-76	DIODE 1SS226		IC305	8-759-635-27	IC M62352GP	
D073	8-719-404-46	DIODE MA110		IC306	8-759-635-27	IC M62352GP	
D301	8-719-404-46	DIODE MA110		IC351	8-759-159-96	IC M52358VP-600D	
D302	8-719-404-35	DIODE MA141WK		IC401	8-752-065-54	IC CXA1207AR	
				IC402	8-759-636-33	IC CXA1452N	
D303	8-719-420-14	DIODE MA8082-M		IC403	8-752-053-21	IC CXA1211M	
D304	8-719-404-46	DIODE MA110		IC501	8-752-051-40	IC CXA1208R	
D305	8-719-404-46	DIODE MA110		IC503	8-752-053-21	IC CXA1211M	
D306	8-719-420-14	DIODE MA8082-M		IC551	8-752-333-24	IC CXL1506M	
D307	8-719-404-46	DIODE MA110		IC552	8-752-333-24	IC CXL1506M	
				< COIL >			
D308	8-719-420-14	DIODE MA8082-M		L001	1-412-033-11	INDUCTOR CHIP 220uH	
D309	8-719-404-46	DIODE MA110		L002	1-410-381-11	INDUCTOR CHIP 10uH	
D310	8-719-420-14	DIODE MA8082-M		L003	1-412-032-11	INDUCTOR CHIP 100uH	
D311	8-719-420-14	DIODE MA8082-M		L004	1-410-385-11	INDUCTOR CHIP 22uH	
D351	8-719-404-46	DIODE MA110		L005	1-412-032-11	INDUCTOR CHIP 100uH	
				L006	1-412-032-11	INDUCTOR CHIP 100uH	
D402	8-719-404-35	DIODE MA141WK		L007	1-412-032-11	INDUCTOR CHIP 100uH	
D403	8-719-820-05	DIODE 1SS181		L008	1-410-385-11	INDUCTOR CHIP 22uH	
D404	8-719-820-05	DIODE 1SS181		L071	1-410-381-11	INDUCTOR CHIP 10uH	
D405	8-719-404-46	DIODE MA110		L072	1-410-657-21	INDUCTOR CHIP 180uH	
D406	8-719-404-46	DIODE MA110					
D407	8-719-404-46	DIODE MA110		L073	1-410-384-31	INDUCTOR CHIP 18uH	
D408	8-719-404-46	DIODE MA110		L074	1-410-379-31	INDUCTOR CHIP 6.8uH	
D409	8-719-404-46	DIODE MA110		L075	1-410-377-31	INDUCTOR CHIP 4.7uH	
D552	8-719-404-35	DIODE MA141WK		L076	1-410-384-31	INDUCTOR CHIP 18uH	
				L077	1-410-376-21	INDUCTOR CHIP 3.9uH	
< FILTER >				L078	1-408-797-11	INDUCTOR CHIP 470uH	
FL071	1-409-475-21	FILTER, TRAP		L079	1-410-392-11	INDUCTOR CHIP 82uH	
FL401	1-239-112-21	FILTER, LOW PASS (Y)		L080	1-410-378-11	INDUCTOR CHIP 5.6uH	
FL402	1-236-775-11	FILTER, LOW PASS (DEM)		L081	1-410-655-31	INDUCTOR CHIP 120uH	
FL501	1-239-110-11	FILTER, BAND PASS		L082	1-410-657-21	INDUCTOR CHIP 180uH	
FL502	1-236-186-11	FILTER, BAND PASS					
FL503	1-579-371-11	FILTER, CERAMIC		L084	1-410-388-31	INDUCTOR CHIP 39uH	
FL551	1-236-848-21	FILTER, LOW PASS		L085	1-410-384-31	INDUCTOR CHIP 18uH	
FL552	1-239-010-11	FILTER, LOW PASS (CCD. PAL. Y)		L086	1-410-382-31	INDUCTOR CHIP 12uH	
< IC >				L087	1-410-381-11	INDUCTOR CHIP 10uH	
IC001	8-759-173-71	IC CXA1555CR		L088	1-410-381-11	INDUCTOR CHIP 10uH	
IC071	8-752-058-02	IC CXA1509AR		L089	1-410-381-11	INDUCTOR CHIP 10uH	
IC072	8-759-009-10	IC MC14069UBF		L090	1-410-387-11	INDUCTOR CHIP 33uH	
IC151	8-759-166-93	IC LB1843V-TLM		L151	1-412-062-11	INDUCTOR CHIP 47uH	
IC152	8-759-823-90	IC LB8110M		L154	1-412-058-11	INDUCTOR CHIP 10uH	
				L155	1-412-064-11	INDUCTOR CHIP 100uH	
IC153	8-752-844-99	IC CXP80620A-015Q		L261	1-410-658-31	INDUCTOR CHIP 220uH	
IC154	8-759-057-77	IC MCD004BN		L262	1-410-381-11	INDUCTOR CHIP 10uH	
IC156	8-759-164-59	IC MCD002BR-TE-B		L263	1-410-381-11	INDUCTOR CHIP 10uH	
IC157	8-759-059-42	IC CXA1481AR		L264	1-410-381-11	INDUCTOR CHIP 10uH	
IC261	8-752-010-20	IC CX20102		L301	1-412-029-11	INDUCTOR CHIP 10uH	
IC262	8-759-067-53	IC CXD2120Q		L302	1-412-029-11	INDUCTOR CHIP 10uH	
IC301	8-759-170-69	IC MC13400VMER		L303	1-412-031-11	INDUCTOR CHIP 47uH	
IC303	8-759-061-70	IC MB86168PFV					

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
L304	1-410-369-11	INDUCTOR CHIP 1uH		Q079	8-729-010-75	TRANSISTOR MSC4116-B/C	
L305	1-410-393-11	INDUCTOR CHIP 100uH		Q080	8-729-117-73	TRANSISTOR 2SC4178-F14	
L306	1-412-029-11	INDUCTOR CHIP 10uH					
L307	1-410-658-31	INDUCTOR CHIP 220uH		Q081	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
L351	1-412-029-11	INDUCTOR CHIP 10uH		Q082	8-729-402-42	TRANSISTOR UN5213	
L402	1-412-029-11	INDUCTOR CHIP 10uH		Q084	8-729-010-75	TRANSISTOR MSC4116-B/C	
L404	1-410-383-31	INDUCTOR CHIP 15uH		Q085	8-729-420-12	TRANSISTOR XN4213	
L405	1-410-390-11	INDUCTOR CHIP 56uH		Q086	8-729-117-73	TRANSISTOR 2SC4178-F14	
L406	1-410-390-11	INDUCTOR CHIP 56uH		Q087	8-729-403-35	TRANSISTOR UN5113	
L407	1-410-386-11	INDUCTOR CHIP 27uH		Q088	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
L408	1-410-378-11	INDUCTOR CHIP 5.6uH		Q089	8-729-010-75	TRANSISTOR MSC4116-B/C	
L410	1-410-386-11	INDUCTOR CHIP 27uH		Q090	8-729-010-75	TRANSISTOR MSC4116-B/C	
L411	1-410-376-21	INDUCTOR CHIP 3.9uH		Q091	8-729-403-35	TRANSISTOR UN5113	
L412	1-410-384-31	INDUCTOR CHIP 18uH		Q092	8-729-010-75	TRANSISTOR MSC4116-B/C	
L413	1-410-379-31	INDUCTOR CHIP 6.8uH		Q151	8-729-907-00	TRANSISTOR DTC114EU	
L501	1-412-029-11	INDUCTOR CHIP 10uH		Q261	8-729-010-75	TRANSISTOR MSC4116-B/C	
L502	1-410-393-11	INDUCTOR CHIP 100uH		Q262	8-729-010-75	TRANSISTOR MSC4116-B/C	
L503	1-410-656-11	INDUCTOR CHIP 150uH		Q263	8-729-010-75	TRANSISTOR MSC4116-B/C	
L504	1-410-393-11	INDUCTOR CHIP 100uH		Q264	8-729-010-75	TRANSISTOR MSC4116-B/C	
L505	1-410-655-31	INDUCTOR CHIP 120uH		Q265	8-729-010-60	TRANSISTOR MSA1586-BC	
L507	1-410-386-11	INDUCTOR CHIP 27uH		Q302	8-729-010-60	TRANSISTOR MSA1586-BC	
L508	1-410-393-11	INDUCTOR CHIP 100uH		Q303	8-729-403-35	TRANSISTOR UN5113	
< IC LINK >				Q304	8-729-117-73	TRANSISTOR 2SC4178-F14	
△PS151	1-576-123-21	LINK, IC CCP2E20 0.8A		Q306	8-729-010-75	TRANSISTOR MSC4116-B/C	
< TRANSISTOR >				Q307	8-729-010-60	TRANSISTOR MSA1586-BC	
Q001	8-729-140-63	TRANSISTOR 2SA1611-M5M6		Q309	8-729-402-42	TRANSISTOR UN5213	
Q002	8-729-140-63	TRANSISTOR 2SA1611-M5M6		Q310	8-729-402-42	TRANSISTOR UN5213	
Q003	8-729-216-22	TRANSISTOR 2SA1162-G		Q313	8-729-402-78	TRANSISTOR XN6401	
Q005	8-729-013-04	TRANSISTOR 2SC4851					
Q006	8-729-013-04	TRANSISTOR 2SC4851		Q314	8-729-106-60	TRANSISTOR 2SB1115A-YQ	
Q007	8-729-013-04	TRANSISTOR 2SC4851		Q315	8-729-010-60	TRANSISTOR MSA1586-BC	
Q008	8-729-013-04	TRANSISTOR 2SC4851		Q316	8-729-402-42	TRANSISTOR UN5213	
Q010	8-729-403-35	TRANSISTOR UN5113		Q351	8-729-403-35	TRANSISTOR UN5113	
Q011	8-729-403-35	TRANSISTOR UN5113		Q352	8-729-402-42	TRANSISTOR UN5213	
Q012	8-729-403-35	TRANSISTOR UN5113		Q353	8-729-403-35	TRANSISTOR UN5113	
Q013	8-729-403-35	TRANSISTOR UN5113		Q357	8-729-010-75	TRANSISTOR MSC4116-B/C	
Q014	8-729-904-07	TRANSISTOR FMG2		Q401	8-729-420-07	TRANSISTOR XN6213	
Q015	8-729-904-07	TRANSISTOR FMG2		Q402	8-729-907-39	TRANSISTOR IMD2	
Q016	8-729-010-75	TRANSISTOR MSC4116-B/C		Q404	8-729-402-42	TRANSISTOR UN5213	
Q017	8-729-010-60	TRANSISTOR MSA1586-BC		Q405	8-729-824-05	TRANSISTOR 3SK248	
Q018	8-729-403-35	TRANSISTOR UN5113		Q407	8-729-402-42	TRANSISTOR UN5213	
Q071	8-729-010-75	TRANSISTOR MSC4116-B/C		Q409	8-729-905-09	TRANSISTOR DTA144WU	
Q072	8-729-140-63	TRANSISTOR 2SA1611-M5M6		Q410	8-729-402-78	TRANSISTOR XN6401	
Q073	8-729-010-75	TRANSISTOR MSC4116-B/C		Q411	8-729-403-06	TRANSISTOR XN1113	
Q074	8-729-402-42	TRANSISTOR UN5213		Q412	8-729-930-13	TRANSISTOR UMH2	
Q075	8-729-402-42	TRANSISTOR UN5213		Q413	8-729-402-42	TRANSISTOR UN5213	
Q076	8-729-010-75	TRANSISTOR MSC4116-B/C		Q414	8-729-117-73	TRANSISTOR 2SC4178-F14	
Q078	8-729-402-42	TRANSISTOR UN5213		Q415	8-729-824-02	TRANSISTOR 2SA1838	
				Q416	8-729-402-42	TRANSISTOR UN5213	
				Q417	8-729-010-75	TRANSISTOR MSC4116-B/C	
				Q418	8-729-402-78	TRANSISTOR XN6401	
				Q420	8-729-010-75	TRANSISTOR MSC4116-B/C	

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Q421	8-729-402-42	TRANSISTOR	UN5213	R004	1-216-813-11	METAL CHIP	220 5% 1/16W
Q422	8-729-823-16	TRANSISTOR	2SC4555-5. 6. 7	R005	1-216-825-11	METAL CHIP	2. 2K 5% 1/16W
Q423	8-729-823-16	TRANSISTOR	2SC4555-5. 6. 7	R006	1-216-829-11	METAL CHIP	4. 7K 5% 1/16W
Q424	8-729-402-42	TRANSISTOR	UN5213	R007	1-216-805-11	METAL CHIP	47 5% 1/16W
Q425	8-729-421-90	TRANSISTOR	XN4113	R008	1-216-805-11	METAL CHIP	47 5% 1/16W
Q426	8-729-117-73	TRANSISTOR	2SC4178-F14	R009	1-216-818-11	METAL CHIP	560 5% 1/16W
Q429	8-729-402-42	TRANSISTOR	UN5213	R010	1-216-821-11	METAL CHIP	1K 5% 1/16W
Q430	8-729-117-73	TRANSISTOR	2SC4178-F14	R011	1-216-821-11	METAL CHIP	1K 5% 1/16W
Q431	8-729-117-73	TRANSISTOR	2SC4178-F14	R012	1-216-821-11	METAL CHIP	1K 5% 1/16W
Q432	8-729-402-81	TRANSISTOR	XN4501	R013	1-216-807-11	METAL CHIP	68 5% 1/16W
Q433	8-729-010-75	TRANSISTOR	MSC4116-B/C	R014	1-216-821-11	METAL CHIP	1K 5% 1/16W
Q434	8-729-010-75	TRANSISTOR	MSC4116-B/C	R015	1-216-829-11	METAL CHIP	4. 7K 5% 1/16W
Q435	8-729-403-35	TRANSISTOR	UN5113	R018	1-216-829-11	METAL CHIP	4. 7K 5% 1/16W
Q437	8-729-010-60	TRANSISTOR	MSA1586-BC	R019	1-216-807-11	METAL CHIP	68 5% 1/16W
Q438	8-729-117-73	TRANSISTOR	2SC4178-F14	R020	1-216-807-11	METAL CHIP	68 5% 1/16W
Q439	8-729-920-99	TRANSISTOR	DTA114EU	R021	1-216-829-11	METAL CHIP	4. 7K 5% 1/16W
Q440	8-729-010-60	TRANSISTOR	MSA1586-BC	R024	1-216-829-11	METAL CHIP	4. 7K 5% 1/16W
Q441	8-729-010-60	TRANSISTOR	MSA1586-BC	R025	1-216-821-11	METAL CHIP	1K 5% 1/16W
Q442	8-729-402-42	TRANSISTOR	UN5213	R026	1-216-821-11	METAL CHIP	1K 5% 1/16W
Q443	8-729-402-42	TRANSISTOR	UN5213	R027	1-216-807-11	METAL CHIP	68 5% 1/16W
Q444	8-729-402-42	TRANSISTOR	UN5213	R028	1-216-837-11	METAL CHIP	22K 5% 1/16W
Q501	8-729-117-73	TRANSISTOR	2SC4178-F14	R029	1-216-837-11	METAL CHIP	22K 5% 1/16W
Q504	8-729-010-60	TRANSISTOR	MSA1586-BC	R030	1-216-837-11	METAL CHIP	22K 5% 1/16W
Q505	8-729-010-60	TRANSISTOR	MSA1586-BC	R031	1-216-821-11	METAL CHIP	1K 5% 1/16W
Q506	8-729-010-75	TRANSISTOR	MSC4116-B/C	R032	1-216-821-11	METAL CHIP	1K 5% 1/16W
Q507	8-729-010-75	TRANSISTOR	MSC4116-B/C	R033	1-216-816-11	METAL CHIP	390 5% 1/16W
Q508	8-729-010-75	TRANSISTOR	MSC4116-B/C	R034	1-216-816-11	METAL CHIP	390 5% 1/16W
Q509	8-729-403-35	TRANSISTOR	UN5113	R035	1-216-816-11	METAL CHIP	390 5% 1/16W
Q510	8-729-117-73	TRANSISTOR	2SC4178-F14	R036	1-216-816-11	METAL CHIP	390 5% 1/16W
Q511	8-729-402-42	TRANSISTOR	UN5213	R037	1-216-864-11	METAL CHIP	0 5% 1/16W
Q513	8-729-402-42	TRANSISTOR	UN5213	R039	1-216-836-11	METAL CHIP	18K 5% 1/16W
Q514	8-729-402-42	TRANSISTOR	UN5213	R040	1-216-833-11	METAL CHIP	10K 5% 1/16W
Q515	8-729-402-42	TRANSISTOR	UN5213	R052	1-216-825-11	METAL CHIP	2. 2K 5% 1/16W
Q516	8-729-402-42	TRANSISTOR	UN5213	R053	1-216-820-11	METAL CHIP	820 5% 1/16W
Q551	8-729-807-86	TRANSISTOR	2SB1295-UL5	R054	1-216-827-11	METAL CHIP	3. 3K 5% 1/16W
Q552	8-729-402-42	TRANSISTOR	UN5213	R071	1-216-821-11	METAL CHIP	1K 5% 1/16W
Q553	8-729-807-86	TRANSISTOR	2SB1295-UL5	R072	1-216-825-11	METAL CHIP	2. 2K 5% 1/16W
Q554	8-729-402-42	TRANSISTOR	UN5213	R073	1-216-839-11	METAL CHIP	33K 5% 1/16W
Q555	8-729-010-60	TRANSISTOR	MSA1586-BC	R074	1-216-835-11	METAL CHIP	15K 5% 1/16W
Q556	8-729-010-75	TRANSISTOR	MSC4116-B/C	R075	1-216-820-11	METAL CHIP	820 5% 1/16W
Q557	8-729-010-75	TRANSISTOR	MSC4116-B/C	R076	1-216-824-11	METAL CHIP	1. 8K 5% 1/16W
Q558	8-729-402-42	TRANSISTOR	UN5213	R077	1-216-833-11	METAL CHIP	10K 5% 1/16W
Q559	8-729-010-60	TRANSISTOR	MSA1586-BC	R078	1-216-817-11	METAL CHIP	470 5% 1/16W
Q560	8-729-010-75	TRANSISTOR	MSC4116-B/C	R079	1-216-817-11	METAL CHIP	470 5% 1/16W
Q599	8-729-403-35	TRANSISTOR	UN5113	R080	1-216-815-11	METAL CHIP	330 5% 1/16W
< RESISTOR >				R081	1-216-820-11	METAL CHIP	820 5% 1/16W
R001	1-216-837-11	METAL CHIP	22K 5% 1/16W	R082	1-216-810-11	METAL CHIP	120 5% 1/16W
R002	1-216-839-11	METAL CHIP	33K 5% 1/16W	R083	1-216-825-11	METAL CHIP	2. 2K 5% 1/16W
R003	1-216-814-11	METAL CHIP	270 5% 1/16W	R084	1-216-812-11	METAL CHIP	180 5% 1/16W
				R085	1-216-819-11	METAL CHIP	680 5% 1/16W

Ref.No.	Part No.	Description	Remark			Ref.No.	Part No.	Description	Remark		
R086	1-216-864-11	METAL CHIP	0	5%	1/16W	R151	1-216-168-00	METAL GLAZE	56	5%	1/8W
R087	1-216-813-11	METAL CHIP	220	5%	1/16W	R152	1-217-671-11	METAL CHIP	1	5%	1/10W
R088	1-216-837-11	METAL CHIP	22K	5%	1/16W	R153	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R089	1-216-837-11	METAL CHIP	22K	5%	1/16W	R154	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R090	1-216-819-11	METAL CHIP	680	5%	1/16W	R155	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W
R091	1-216-821-11	METAL CHIP	1K	5%	1/16W	R156	1-216-839-11	METAL CHIP	33K	5%	1/16W
R092	1-216-821-11	METAL CHIP	1K	5%	1/16W	R157	1-216-852-11	METAL CHIP	390K	5%	1/16W
R093	1-216-816-11	METAL CHIP	390	5%	1/16W	R158	1-216-838-11	METAL CHIP	27K	5%	1/16W
R095	1-216-833-11	METAL CHIP	10K	5%	1/16W	R159	1-216-839-11	METAL CHIP	33K	5%	1/16W
R096	1-216-821-11	METAL CHIP	1K	5%	1/16W	R160	1-216-853-11	METAL CHIP	470K	5%	1/16W
R097	1-216-837-11	METAL CHIP	22K	5%	1/16W	R161	1-216-841-11	METAL CHIP	47K	5%	1/16W
R098	1-216-813-11	METAL CHIP	220	5%	1/16W	R162	1-216-821-11	METAL CHIP	1K	5%	1/16W
R099	1-216-837-11	METAL CHIP	22K	5%	1/16W	R163	1-218-883-11	METAL CHIP	33K	0. 50%	1/16W
R100	1-216-818-11	METAL CHIP	560	5%	1/16W	R164	1-218-849-11	METAL CHIP	1. 2K	0. 50%	1/16W
R101	1-216-826-11	METAL CHIP	2. 7K	5%	1/16W	R166	1-216-809-11	METAL CHIP	100	5%	1/16W
R102	1-216-821-11	METAL CHIP	1K	5%	1/16W	R167	1-217-671-11	METAL CHIP	1	5%	1/10W
R103	1-216-820-11	METAL CHIP	820	5%	1/16W	R168	1-217-671-11	METAL CHIP	1	5%	1/10W
R104	1-216-830-11	METAL CHIP	5. 6K	5%	1/16W	R169	1-217-671-11	METAL CHIP	1	5%	1/10W
R105	1-216-820-11	METAL CHIP	820	5%	1/16W	R170	1-217-671-11	METAL CHIP	1	5%	1/10W
R106	1-216-814-11	METAL CHIP	270	5%	1/16W	R171	1-216-826-11	METAL CHIP	2. 7K	5%	1/16W
R107	1-216-817-11	METAL CHIP	470	5%	1/16W	R172	1-216-828-11	METAL CHIP	3. 9K	5%	1/16W
R108	1-216-817-11	METAL CHIP	470	5%	1/16W	R173	1-216-831-11	METAL CHIP	6. 8K	5%	1/16W
R109	1-216-821-11	METAL CHIP	1K	5%	1/16W	R174	1-216-833-11	METAL CHIP	10K	5%	1/16W
R110	1-216-821-11	METAL CHIP	1K	5%	1/16W	R175	1-216-833-11	METAL CHIP	10K	5%	1/16W
R111	1-216-821-11	METAL CHIP	1K	5%	1/16W	R176	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W
R112	1-216-821-11	METAL CHIP	1K	5%	1/16W	R177	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W
R114	1-216-821-11	METAL CHIP	1K	5%	1/16W	R178	1-216-833-11	METAL CHIP	10K	5%	1/16W
R116	1-216-821-11	METAL CHIP	1K	5%	1/16W	R179	1-216-821-11	METAL CHIP	1K	5%	1/16W
R117	1-216-841-11	METAL CHIP	47K	5%	1/16W	R182	1-216-821-11	METAL CHIP	1K	5%	1/16W
R118	1-216-828-11	METAL CHIP	3. 9K	5%	1/16W	R183	1-216-821-11	METAL CHIP	1K	5%	1/16W
R119	1-216-817-11	METAL CHIP	470	5%	1/16W	R184	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W
R120	1-216-810-11	METAL CHIP	120	5%	1/16W	R186	1-216-833-11	METAL CHIP	10K	5%	1/16W
R121	1-216-815-11	METAL CHIP	330	5%	1/16W	R187	1-216-857-11	METAL CHIP	1M	5%	1/16W
R122	1-216-833-11	METAL CHIP	10K	5%	1/16W	R189	1-216-840-11	METAL CHIP	39K	5%	1/16W
R123	1-216-831-11	METAL CHIP	6. 8K	5%	1/16W	R190	1-216-849-11	METAL CHIP	220K	5%	1/16W
R124	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R191	1-216-864-11	METAL CHIP	0	5%	1/16W
R125	1-216-833-11	METAL CHIP	10K	5%	1/16W	R193	1-216-864-11	METAL CHIP	0	5%	1/16W
R126	1-216-817-11	METAL CHIP	470	5%	1/16W	R195	1-216-833-11	METAL CHIP	10K	5%	1/16W
R127	1-216-823-11	METAL CHIP	1. 5K	5%	1/16W	R196	1-216-824-11	METAL CHIP	1. 8K	5%	1/16W
R128	1-216-805-11	METAL CHIP	47	5%	1/16W	R197	1-216-849-11	METAL CHIP	220K	5%	1/16W
R129	1-216-824-11	METAL CHIP	1. 8K	5%	1/16W	R198	1-216-841-11	METAL CHIP	47K	5%	1/16W
R130	1-216-830-11	METAL CHIP	5. 6K	5%	1/16W	R199	1-216-856-11	METAL CHIP	820K	5%	1/16W
R131	1-216-822-11	METAL CHIP	1. 2K	5%	1/16W	R200	1-216-856-11	METAL CHIP	820K	5%	1/16W
R132	1-216-824-11	METAL CHIP	1. 8K	5%	1/16W	R201	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W
R133	1-216-824-11	METAL CHIP	1. 8K	5%	1/16W	R202	1-216-837-11	METAL CHIP	22K	5%	1/16W
R134	1-216-839-11	METAL CHIP	33K	5%	1/16W	R203	1-216-841-11	METAL CHIP	47K	5%	1/16W
R135	1-216-837-11	METAL CHIP	22K	5%	1/16W	R204	1-216-837-11	METAL CHIP	22K	5%	1/16W
R136	1-216-837-11	METAL CHIP	22K	5%	1/16W	R205	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R138	1-216-824-11	METAL CHIP	1. 8K	5%	1/16W	R206	1-216-845-11	METAL CHIP	100K	5%	1/16W
R150	1-217-671-11	METAL CHIP	1	5%	1/10W	R207	1-216-813-11	METAL CHIP	220	5%	1/16W

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
R211	1-216-821-11	METAL CHIP	1K	5%	1/16W	R313	1-216-841-11	METAL CHIP	47K	5%	1/16W
R213	1-216-864-11	METAL CHIP	0	5%	1/16W	R314	1-216-817-11	METAL CHIP	470	5%	1/16W
R215	1-216-833-11	METAL CHIP	10K	5%	1/16W	R315	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R216	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R316	1-216-821-11	METAL CHIP	1K	5%	1/16W
R217	1-216-821-11	METAL CHIP	1K	5%	1/16W	R317	1-216-821-11	METAL CHIP	1K	5%	1/16W
R218	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	R318	1-216-803-11	METAL CHIP	33	5%	1/16W
R219	1-216-833-11	METAL CHIP	10K	5%	1/16W	R319	1-216-804-11	METAL CHIP	39	5%	1/16W
R261	1-216-819-11	METAL CHIP	680	5%	1/16W	R320	1-216-811-11	METAL CHIP	150	5%	1/16W
R262	1-216-821-11	METAL CHIP	1K	5%	1/16W	R321	1-216-803-11	METAL CHIP	33	5%	1/16W
R263	1-216-811-11	METAL CHIP	150	5%	1/16W	R322	1-216-804-11	METAL CHIP	39	5%	1/16W
R264	1-216-819-11	METAL CHIP	680	5%	1/16W	R329	1-216-821-11	METAL CHIP	1K	5%	1/16W
R265	1-216-837-11	METAL CHIP	22K	5%	1/16W	R330	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R266	1-216-839-11	METAL CHIP	33K	5%	1/16W	R331	1-216-791-11	METAL CHIP	3.3	5%	1/16W
R267	1-216-809-11	METAL CHIP	100	5%	1/16W	R332	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R268	1-216-833-11	METAL CHIP	10K	5%	1/16W	R333	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R269	1-216-833-11	METAL CHIP	10K	5%	1/16W	R334	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R270	1-216-819-11	METAL CHIP	680	5%	1/16W	R335	1-216-853-11	METAL CHIP	470K	5%	1/16W
R271	1-216-815-11	METAL CHIP	220	5%	1/16W	R336	1-216-853-11	METAL CHIP	470K	5%	1/16W
R272	1-216-851-11	METAL CHIP	330K	5%	1/16W	R337	1-216-841-11	METAL CHIP	47K	5%	1/16W
R273	1-216-817-11	METAL CHIP	330K	5%	1/16W	R338	1-216-833-11	METAL CHIP	10K	5%	1/16W
R274	1-216-837-11	METAL CHIP	10K	5%	1/16W	R340	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R275	1-216-821-11	METAL CHIP	1.5K	5%	1/16W	R341	1-216-864-11	METAL CHIP	0	5%	1/16W
R276	1-216-813-11	METAL CHIP	10K	5%	1/16W	R345	1-216-849-11	METAL CHIP	220K	5%	1/16W
R277	1-216-816-11	METAL CHIP	390	5%	1/16W	R351	1-216-819-11	METAL CHIP	680	5%	1/16W
R278	1-218-313-11	METAL CHIP	560	0.50%	1/16W	R353	1-216-845-11	METAL CHIP	100K	5%	1/16W
R279	1-216-821-11	METAL CHIP	1K	5%	1/16W	R354	1-216-849-11	METAL CHIP	220K	5%	1/16W
R280	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	R356	1-216-833-11	METAL CHIP	10K	5%	1/16W
R281	1-216-819-11	METAL CHIP	680	5%	1/16W	R358	1-218-739-11	METAL CHIP	91K	0.50%	1/16W
R282	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	R358	1-218-894-11	METAL CHIP	91K	0.50%	1/16W
R283	1-216-820-11	METAL CHIP	820	5%	1/16W	R359	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R284	1-216-811-11	METAL CHIP	150	5%	1/16W	R360	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R285	1-216-819-11	METAL CHIP	680	5%	1/16W	R361	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R286	1-216-845-11	METAL CHIP	100K	5%	1/16W	R362	1-216-834-11	METAL CHIP	12K	5%	1/16W
R289	1-216-845-11	METAL CHIP	100K	5%	1/16W	R363	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R290	1-216-857-11	METAL CHIP	1M	5%	1/16W	R364	1-216-864-11	METAL CHIP	0	5%	1/16W
R291	1-216-821-11	METAL CHIP	1K	5%	1/16W	R373	1-216-840-11	METAL CHIP	39K	5%	1/16W
R292	1-216-852-11	METAL CHIP	390K	5%	1/16W	R374	1-216-864-11	METAL CHIP	0	5%	1/16W
R294	1-216-848-11	METAL CHIP	180K	5%	1/16W	R377	1-216-864-11	METAL CHIP	0	5%	1/16W
R296	1-216-864-11	METAL CHIP	0	5%	1/16W	R378	1-216-864-11	METAL CHIP	0	5%	1/16W
R301	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R379	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R302	1-218-856-11	METAL CHIP	2.4K	0.50%	1/16W	R401	1-216-841-11	METAL CHIP	47K	5%	1/16W
R303	1-216-817-11	METAL CHIP	470	5%	1/16W	R403	1-216-833-11	METAL CHIP	10K	5%	1/16W
R304	1-216-821-11	METAL CHIP	1K	5%	1/16W	R405	1-216-856-11	METAL CHIP	820K	5%	1/16W
R305	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	R408	1-216-841-11	METAL CHIP	47K	5%	1/16W
R306	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R409	1-216-820-11	METAL CHIP	820	5%	1/16W
R307	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R410	1-216-821-11	METAL CHIP	1K	5%	1/16W
R308	1-216-840-11	METAL CHIP	39K	5%	1/16W	R411	1-216-804-11	METAL CHIP	39	5%	1/16W
R309	1-216-837-11	METAL CHIP	22K	5%	1/16W	R412	1-216-803-11	METAL CHIP	33	5%	1/16W
R310	1-216-841-11	METAL CHIP	47K	5%	1/16W	R413	1-218-895-11	METAL CHIP	100K	0.50%	1/16W
R312	1-216-833-11	METAL CHIP	10K	5%	1/16W	R414	1-216-853-11	METAL CHIP	470K	5%	1/16W

Ref.No.	Part No.	Description	Remark			Ref.No.	Part No.	Description	Remark		
R415	1-216-845-11	METAL CHIP	100K	5%	1/16W	R470	1-216-834-11	METAL CHIP	12K	5%	1/16W
R419	1-216-818-11	METAL CHIP	560	5%	1/16W	R471	1-216-841-11	METAL CHIP	47K	5%	1/16W
R420	1-216-821-11	METAL CHIP	1K	5%	1/16W	R472	1-216-833-11	METAL CHIP	10K	5%	1/16W
R421	1-216-839-11	METAL CHIP	33K	5%	1/16W	R473	1-216-835-11	METAL CHIP	15K	5%	1/16W
R422	1-216-836-11	METAL CHIP	18K	5%	1/16W	R474	1-216-864-11	METAL CHIP	0	5%	1/16W
R423	1-216-821-11	METAL CHIP	1K	5%	1/16W	R475	1-216-864-11	METAL CHIP	0	5%	1/16W
R424	1-216-841-11	METAL CHIP	47K	5%	1/16W	R478	1-216-833-11	METAL CHIP	10K	5%	1/16W
R425	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	R479	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R426	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	R480	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R427	1-216-837-11	METAL CHIP	22K	5%	1/16W	R481	1-216-821-11	METAL CHIP	1K	5%	1/16W
R428	1-218-849-11	METAL CHIP	1.2K	0.50%	1/16W	R482	1-216-821-11	METAL CHIP	1K	5%	1/16W
R429	1-218-859-11	METAL CHIP	3.3K	0.50%	1/16W	R483	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R430	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	R484	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R431	1-216-833-11	METAL CHIP	10K	5%	1/16W	R485	1-216-821-11	METAL CHIP	1K	5%	1/16W
R433	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	R486	1-216-819-11	METAL CHIP	680	5%	1/16W
R434	1-216-821-11	METAL CHIP	1K	5%	1/16W	R487	1-216-817-11	METAL CHIP	470	5%	1/16W
R435	1-216-821-11	METAL CHIP	1K	5%	1/16W	R488	1-216-836-11	METAL CHIP	18K	5%	1/16W
R436	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	R489	1-216-837-11	METAL CHIP	22K	5%	1/16W
R437	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	R490	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R438	1-216-821-11	METAL CHIP	1K	5%	1/16W	R491	1-216-813-11	METAL CHIP	220	5%	1/16W
R439	1-216-833-11	METAL CHIP	10K	5%	1/16W	R492	1-216-813-11	METAL CHIP	220	5%	1/16W
R440	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R493	1-216-814-11	METAL CHIP	270	5%	1/16W
R441	1-216-815-11	METAL CHIP	330	5%	1/16W	R494	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R442	1-216-814-11	METAL CHIP	270	5%	1/16W	R495	1-216-864-11	METAL CHIP	0	5%	1/16W
R443	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	R497	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R444	1-216-821-11	METAL CHIP	1K	5%	1/16W	R498	1-216-809-11	METAL CHIP	100	5%	1/16W
R445	1-216-833-11	METAL CHIP	10K	5%	1/16W	R499	1-216-819-11	METAL CHIP	680	5%	1/16W
R446	1-216-814-11	METAL CHIP	270	5%	1/16W	R500	1-216-815-11	METAL CHIP	330	5%	1/16W
R447	1-216-813-11	METAL CHIP	220	5%	1/16W	R501	1-216-819-11	METAL CHIP	680	5%	1/16W
R448	1-216-813-11	METAL CHIP	220	5%	1/16W	R504	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R449	1-216-833-11	METAL CHIP	10K	5%	1/16W	R505	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R450	1-216-833-11	METAL CHIP	10K	5%	1/16W	R507	1-216-864-11	METAL CHIP	0	5%	1/16W
R451	1-216-811-11	METAL CHIP	150	5%	1/16W	R509	1-216-864-11	METAL CHIP	0	5%	1/16W
R452	1-216-817-11	METAL CHIP	470	5%	1/16W	R510	1-216-833-11	METAL CHIP	10K	5%	1/16W
R453	1-216-821-11	METAL CHIP	1K	5%	1/16W	R511	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R454	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	R512	1-216-818-11	METAL CHIP	560	5%	1/16W
R455	1-216-817-11	METAL CHIP	470	5%	1/16W	R513	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R457	1-216-815-11	METAL CHIP	330	5%	1/16W	R514	1-216-821-11	METAL CHIP	1K	5%	1/16W
R458	1-216-817-11	METAL CHIP	470	5%	1/16W	R516	1-216-821-11	METAL CHIP	1K	5%	1/16W
R459	1-216-837-11	METAL CHIP	22K	5%	1/16W	R517	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R460	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R518	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R461	1-216-841-11	METAL CHIP	47K	5%	1/16W	R520	1-218-895-11	METAL CHIP	100K	0.50%	1/16W
R462	1-216-841-11	METAL CHIP	47K	5%	1/16W	R521	1-216-864-11	METAL CHIP	0	5%	1/16W
R463	1-216-841-11	METAL CHIP	47K	5%	1/16W	R522	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R464	1-218-839-11	METAL CHIP	470	0.50%	1/16W	R523	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R465	1-218-837-11	METAL CHIP	390	0.50%	1/16W	R524	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R466	1-216-841-11	METAL CHIP	47K	5%	1/16W	R525	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R467	1-216-841-11	METAL CHIP	47K	5%	1/16W	R526	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R468	1-216-841-11	METAL CHIP	47K	5%	1/16W	R527	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R469	1-216-833-11	METAL CHIP	10K	5%	1/16W	R528	1-216-830-11	METAL CHIP	5.6K	5%	1/16W

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R529	1-216-829-11	METAL CHIP	4.7K 5% 1/16W	R588	1-216-841-11	METAL CHIP	47K 5% 1/16W
R530	1-216-817-11	METAL CHIP	470 5% 1/16W	R589	1-216-833-11	METAL CHIP	10K 5% 1/16W
R531	1-216-834-11	METAL CHIP	12K 5% 1/16W	R590	1-216-840-11	METAL CHIP	39K 5% 1/16W
R532	1-216-834-11	METAL CHIP	12K 5% 1/16W	R591	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
R533	1-216-819-11	METAL CHIP	680 5% 1/16W	R592	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
R534	1-216-823-11	METAL CHIP	1.5K 5% 1/16W	R593	1-216-820-11	METAL CHIP	820 5% 1/16W
R535	1-216-823-11	METAL CHIP	1.5K 5% 1/16W	R595	1-216-833-11	METAL CHIP	10K 5% 1/16W
R536	1-216-824-11	METAL CHIP	1.8K 5% 1/16W	R596	1-216-833-11	METAL CHIP	10K 5% 1/16W
R537	1-216-822-11	METAL CHIP	1.2K 5% 1/16W	R599	1-216-831-11	METAL CHIP	6.8K 5% 1/16W
R540	1-216-845-11	METAL CHIP	100K 5% 1/16W	< NETWORK >			
R541	1-216-826-11	METAL CHIP	2.7K 5% 1/16W	RB151	1-236-432-11	NETWORK, RES 47K	
R542	1-216-807-11	METAL CHIP	68 5% 1/16W	RB152	1-236-448-11	NETWORK, RES 1.0M	
R543	1-216-823-11	METAL CHIP	1.5K 5% 1/16W	RB153	1-236-432-11	NETWORK, RES 47K	
R544	1-216-837-11	METAL CHIP	22K 5% 1/16W	RB154	1-236-432-11	NETWORK, RES 47K	
R546	1-216-845-11	METAL CHIP	100K 5% 1/16W	RB155	1-236-412-11	NETWORK, RES 1.0K	
R549	1-216-842-11	METAL CHIP	56K 5% 1/16W	RB156	1-236-412-11	NETWORK, RES 1.0K	
R550	1-216-841-11	METAL CHIP	47K 5% 1/16W	RB157	1-236-424-11	NETWORK, RES 10K	
R551	1-216-833-11	METAL CHIP	10K 5% 1/16W	RB158	1-236-424-11	NETWORK, RES 10K	
R552	1-216-829-11	METAL CHIP	4.7K 5% 1/16W	RB159	1-236-424-11	NETWORK, RES 10K	
R553	1-216-829-11	METAL CHIP	4.7K 5% 1/16W	RB160	1-236-432-11	NETWORK, RES 47K	
R554	1-216-827-11	METAL CHIP	3.3K 5% 1/16W	RB161	1-236-424-11	NETWORK, RES 10K	
R555	1-216-810-11	METAL CHIP	120 5% 1/16W	RB162	1-236-444-11	NETWORK, RES 470K	
R556	1-216-844-11	METAL CHIP	82K 5% 1/16W	RB163	1-236-440-11	NETWORK, RES 220K	
R557	1-216-864-11	METAL CHIP	0 5% 1/16W	RB164	1-236-408-11	NETWORK, RES 470	
R559	1-216-857-11	METAL CHIP	1M 5% 1/16W	RB165	1-236-424-11	NETWORK, RES 10K	
R561	1-216-864-11	METAL CHIP	0 5% 1/16W	< VARIABLE RESISTOR >			
R563	1-216-839-11	METAL CHIP	33K 5% 1/16W	RV551	1-238-086-11	RES, ADJ, CERMET	470
R564	1-216-842-11	METAL CHIP	56K 5% 1/16W	< FLEXIBLE BOARD >			
R565	1-216-817-11	METAL CHIP	470 5% 1/16W	W002	1-642-238-11	FP-484 FLEXIBLE BOARD	
R566	1-216-821-11	METAL CHIP	1K 5% 1/16W	W152	1-642-236-11	FP-482 FLEXIBLE BOARD	
R567	1-216-821-11	METAL CHIP	1K 5% 1/16W	W302	1-642-237-11	FP-483 FLEXIBLE BOARD	
R568	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	W303	1-642-241-11	FP-519 FLEXIBLE BOARD	
R569	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	W304	1-642-242-11	FP-520 FLEXIBLE BOARD	
R570	1-216-821-11	METAL CHIP	1K 5% 1/16W	< VIBRATOR >			
R571	1-216-821-11	METAL CHIP	1K 5% 1/16W	X151	1-579-368-31	VIBRATOR, CRYSTAL (11.7MHz)	
R572	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	X261	1-579-558-21	VIBRATOR, CRYSTAL (11.50MHz)	
R573	1-216-810-11	METAL CHIP	120 5% 1/16W	X501	1-579-366-11	VIBRATOR, CRYSTAL (4.43MHz)	
R574	1-216-844-11	METAL CHIP	82K 5% 1/16W	*****			
R575	1-216-864-11	METAL CHIP	0 5% 1/16W	MISCELLANEOUS			
R577	1-216-853-11	METAL CHIP	470K 5% 1/16W	*****			
R578	1-216-857-11	METAL CHIP	1M 5% 1/16W	3	1-537-297-31	TERMINAL BOARD, BATTERY	
R579	1-216-864-11	METAL CHIP	0 5% 1/16W	19	1-542-180-11	MICROPHONE ASSY	
R580	1-216-839-11	METAL CHIP	33K 5% 1/16W	29	1-944-055-11	HARNESS (CD-26)	
R581	1-216-842-11	METAL CHIP	56K 5% 1/16W	61	1-466-689-21	SWITCH BLOCK, CONTROL (CF-4)	
R582	1-216-817-11	METAL CHIP	470 5% 1/16W	63	1-466-800-11	SWITCH BLOCK, CONTROL (FK-4)	
R583	1-216-826-11	METAL CHIP	2.7K 5% 1/16W				
R584	1-216-821-11	METAL CHIP	1K 5% 1/16W				
R585	1-216-825-11	METAL CHIP	2.2K 5% 1/16W				
R586	1-216-825-11	METAL CHIP	2.2K 5% 1/16W				
R587	1-216-825-11	METAL CHIP	2.2K 5% 1/16W				

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
127	1-537-407-21	TERMINAL BOARD (JACK BOARD)				*****	
224	1-639-334-11	FP-422 FLEXIBLE BOARD				HARDWARE LIST	
404	1-547-529-21	FILTER BLOCK, OPTICAL (OFB-03-03)				*****	
IC301	A-7030-371-A	CCD ASSY (059 SERVICE) (CCD IMAGER)					
M901	A-7048-653-A	DRUM BLOCK ASSY (DGH-80D-R)		#1	7-624-102-04	STOP RING 1.5 TYPE-E	
M902	8-835-329-12	MOTOR, DC U-21A (CAPSTAN)					
M903	1-541-607-21	MOTOR, DC (LA12G-344VA) (LOADING)					
M904	3-708-445-01	METER, IG (IRIS)					
M905	3-708-443-01	MOTOR ASSY, STEPPING (FOCUS)					
M906	3-708-442-01	MOTOR ASSY, PZ (ZOOM)					
△PS901	1-532-841-21	LINK, IC					
△PS902	1-532-841-21	LINK, IC					
△PS903	1-532-841-21	LINK, IC					
S991	1-572-611-11	SWITCH, LEAF (C LOCK)					
S992	1-572-802-12	SWITCH, PUSH (3 KEY)					
		(REC PROOF, ME/MP, Hi-8 MP)					
SE101	1-810-024-11	SENSOR, ANGULAR VELOCITY (YS)					
SE102	1-810-024-21	SENSOR, ANGULAR VELOCITY (PS)					
△V901	1-452-565-11	CRT ASSY (M01KKD70WB)					
△W501	1-540-019-21	SOCKET ASSY, CRT					
W101	1-642-239-11	FP-486 FLEXIBLE BOARD					

ACCESSORIES & PACKING MATERIALS							

	1-466-801-11	REMOTE CONTROLLER (CAM CODER) (RMT-508)					
	1-573-291-11	CONNECTOR, CONVERSION					
	1-575-334-11	CORD, CONNECTION (A/V connecting cable)					
	1-575-335-21	CORD, CONNECTION					
		(S VIDEO connecting cable)					
	3-738-517-01	BELT (S), SHOULDER					
	3-947-664-11	HOLDER (B), REMOTE CONTROL					
*	3-954-984-01	CUSHION, ACC					
	3-708-412-01	LID, BATTERY CASE, LITHIUM					
	3-757-247-11	MANUAL, INSTRUCTION (ENGLISH)					
	3-757-247-41	MANUAL, INSTRUCTION (FRENCH, DUTCH)					
	3-757-247-51	MANUAL, INSTRUCTION (GERMAN, SWEDISH)					
	3-757-247-71	MANUAL, INSTRUCTION (PORTUGUESE)					
	3-757-247-81	MANUAL, INSTRUCTION (DANISH, FINNISH)					
*	3-947-226-01	CUSHION (LOWER)					
*	3-949-320-21	INDIVIDUAL CARTON					
**	AC-V35/V35A	AC POWER ADAPTOR.					
***	NP-55H	BATTERY PACK.					
<u>Note.</u>							
**	MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.						
***	MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.						

Be sure to read "Precautions for Replacement of CCD Imager" on page 95 when changing the CCD imager.

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

SECTION 7

INTERFACES • IC PIN FUNCTIONS

7-1. CAMERA MICROPROCESSOR PIN FUNCTION (IC702 ON VC-135 BOARD: CXP80624-443Q)

Pin No.	Signal	I/O	Function
1	A/D STBY	O	Not used.
2	EPROM SCK	O	
3	ZOOM M REV	O	
4	ZOOM M FWD	O	Zoom motor control signal. Normally "H". 20 msec period PWM signal when rotating to TELE.
5	PB1		Not used.
6	PB0		
7	MF LED	O	
8	FOC END LED	O	ON/OFF signal for focus end detection. Instantaneously "H" when camera power supply is turned on. Normally "L".
9	VAP RESET	O	VAP microprocessor (IC002 on VD-22 board) reset signal. Normally "H".
10	CORE RESET	O	Camera core (IC708 on VC-135 board) reset signal. Normally "H". "L" when reset.
11	PDR RESET	O	Focus predriver (IC703 on VC-135 board) reset signal. Normally "H". "L" when reset.
12			Not used.
13	TG SYBY 0		
14	OPD RESET	O	
15	PJ7/FSEL31		Not used.
16	PJ6/FSEL30		
17	PJ5/FSEL21		
18	PJ4/FSEL20		
19	PJ3/FSEL11		
20	PJ2/FSEL10		
21	PJ1/FSEL01		
22	PJ0/FSEL00		
23	ZP A/D MODE		Connected to GND.
24	EPROM BUSY	I	BUSY signal from EEPROM (IC701 on VC-135 board). Normally "H". "L" pulse when data reading/writing.
25			Not used.
26			
27	PD3/C		
28	MF DIR	I	Signal indicating focus ring rotation direction. "H" when rotated towards WIDE side. "L" when rotated towards TELE side.
29	FOC END FAR 2	I	Focus end FAR 2 sensor input. Normally "L". Instantaneously "H" when camera power supply is turned on.
30	FOC END FAR 1	I	Focus end FAR 1 sensor input. Normally "L". Instantaneously "H" when camera power supply is turned on.
31	CAM ON	O	Not used.
32	PH6		
33	PH5		
34	PH4		
35	PH3		
36	PH2		
37	PH1		
38	FOC END LED	O	
39	MP		Connected to GND.
40	CAM RESET	I	Reset signal input. Normally "H". "L" when reset.

Pin No.	Signal	I/O	Function
41	VSS		GND
42	XTAL	O	10 MHz clock oscillation circuit.
43	EXTAL	I	
44	CS CAM	I	
45	VTR SI	I	Serial data input from system control microprocessor.
46	VTR SO	O	Serial data output to system control microprocessor.
47	VTR SCK	I	Serial data transfer clock.
48	PF7/AN11		Not used.
49	PF6/AN10		
50	PF5/AN9		
51	PF4		
52	AVSS		GND
53	AVREF		Analog input port reference voltage (5V).
54	AVDD		Analog input port power supply (5V).
55	PF3/AN7		Connected to GND.
56	PF2/AN6		
57	MAN FOCUS (2)	I	
58	MAN FOCUS (1)	I	
59	ZOOM SW	I	Zoom key input. 4.8V: TELE 2, 3.6V: TELE 1, 1.2V: WIDE 1, 0V: WIDE 2, 2.3V: no input.
60	ZOOM POS X4	I	Connected to GND.
61	HALL A/D	I	Hall voltage. approx. 1V (iris open) to approx. 3V (iris close).
62	ZOOM POSITION A/D	I	Connected to GND.
63	PG7/EX11		Connected to +5V.
64	PB V	I	V SYNC from mechanism control microprocessor (IC153 on VS-101 board).
65	PG5/SYNC1		Not used. Connected to +5V.
66	VTR SYNC		
67	PB CTL		
68	DPG		
69	FOC FG		Not used.
70	AF BUSY	I	
71	PE7/DAB1		
72	PE6/DAB0		
73	PE5/DAA1		Not used.
74	PE4/DAA0		
75	IRIS PWM	O	Iris control signal. 25.5 μ sec period PWM signal.
76	ZP PWM	O	Not used.
77	FOCUS PULSE	I	Signal indicating focus ring rotation. Normally "L". "H" pulse when focus ring is rotated.
78	VD	I	Connected to +5V.
79	CAM SI	I	Serial data input.
80	CAM SO	O	Serial data output.
81	CAM SCK	O	Serial data transfer clock.
82	AJST	I	Timing pulse input for adjusting from SYNC generator (IC710 on VC-135 board). Normally "H".
83	PI/TO		Not used.
84	PI/PWM		
85	PI/PO		
86	PI O		Connected to +5V.
87	PKO		GND
88	GND		

Pin No.	Signal	I/O	Function
89	VDD		+5V power supply
90	VPP		
91	CS VAP	O	Chip select signal to VAP microprocessor (IC002 on VD-22 board).
92	CS PDR	O	Chip select signal to focus predriver (IC703 on VC-135 board).
93	CS CAM D/A	O	Chip select signal to camera EVR (IC705 on VC-135 board).
94	CS ROM	O	Chip select signal to EEPROM (IC701 on VC-135 board).
95	CS OPD	O	Chip select signal to OPD (IC706 on VC-135 board).
96	NTSC	O	NTSC: "L", PAL: "H".
97	CS CORE	O	Chip select signal to camera core (IC708 on VC-135 board).
98	CS TG	O	Chip select signal to timing generator (IC801 on VC-135 board).
99	J STB		Not used.
100	CS A/D	O	Chip select signal to zoom position A/D converter (IC854 on VC-135 board).

7-2. SYSTEM (MECHANISM) CONTROL MICROPROCESSOR PIN FUNCTION (IC153 ON VS-101 BOARD: CXP80620A-015Q)

Pin No.	Signal	I/O	Function
1	CAP ON	O	Capstan driver ON/OFF control signal. "H" when capstan ON.
2	CAP FWD/RVS	O	Capstan rotating direction control signal. "H": FWD, "L": RVS.
3	RP PB MODE	O	REC/PB select signal of REC/PB amplifier (IC001 on VC-101 board) and ATF servo IC (IC157 on VC-101 board). "H": PB.
4	FEON	O	Flying erase oscillation ON/OFF control signal. "L": oscillation.
5	JOG VD	O	False VD signal to be inserted into playback video signal during variable speed playback.
6	JOG	O	Variable speed/normal speed playback select signal of video circuit. "H" when variable speed playback.
7	MIC MONO	I	External microphone monaural/stereo discrimination input. "L": When monaural microphone is used.
8	PB 1.7M DET	I	AFM stereo tape/monaural tape discrimination input. "H": When stereo or bilingual tape is played back.
9	J MONO	I	Audio input/output terminal monaural/stereo discrimination input. "L": When jack is inserted in right channel terminal.
10	INT VD	O	Internal VD signal.
11	PBV	O	V sync as reference to character generator, communication and LANC period. Lock to CAM VD (Pin 64) when CAM. Lock to VTR sync (Pin 65) when VTR.
12	NC	O	Not used (Open).
13	NC	O	
14	NC	O	
15	MSW C	I	MODE switch input.
16	MSW B	I	
17	MSW A	I	
18	NC		
19	REC PROOF SW	I	Erasure protection switch input. "L" when REC prohibit.
20	ME/MP SW	I	ME/MP switch input. "L": MP, "H": ME.
21	E/L DET	I	Normal/Hi8 discrimination input. "H": When Hi8 tape is played back.
22	VIDEO MUTE	O	Video output mute signal. "H": mute.
23	LINE MIX	I	"H" only when Hi-Fi sound switch is at the "Stereo" (Green) position and plug is not inserted in the right audio output terminal as well during playback.
24	MX SEL 1	O	During REC: Monaural/stereo switching signal. During Playback: Monaural/stereo switching signal.
25	MX SEL 2	O	
26	MX ON/OFF	O	Matrix ON/OFF signal. "H": Matrix ON (Stereo REC/PB).
27	Hi8/NORM(E/L)	O	Video circuit normal/Hi8 switching signal. "H": Hi8 mode.
28	CAM/LINE	O	Camera input/line input select signal. "H" when camera input.
29	SP/LP	O	SP/LP switching signal. "L": LP.
30	EDIT	O	Video circuit normal/EDIT switching signal. "L": When "EDIT" switch is ON.
31	UNLOAD	O	Loading motor control signal. "H" or "H" pulse when unloading.
32	LOAD	O	Loading motor control signal. "H" or "H" pulse when loading.
33	LM LIM CONT	O	Loading motor limiter control signal. Temporary "H" when loading.
34	DRUM ON	O	Drum motor ON/OFF signal. "H" (approx. 1.3V) when drum ON.
35	DRUM FWD/RVS	O	Drum rotating direction control signal. Normally "H".
36	NC	O	Not used (open).
37	NC	O	
38	REEL HALL CONT	O	Reel FG sensor (HALL element) power supply control signal.
39	MP	I	Connected to GND.

Pin No.	Signal	I/O	Function
40	SYSTEM RESET	I	Reset signal from mode control microprocessor (IC924 on VC-135 board). "L" when reset.
41	VSS		GND
42	XTAL	O	11.72 MHz clock oscillation circuit.
43	EXTAL	I	
44	CS COSMO	I	Chip select signal from mode control microprocessor (IC924 on VC-135 board).
45	DATA TO SLAVE	I	Serial data input from mode control microprocessor.
46	DATA TO MASTER	O	Serial data output to mode control microprocessor.
47	SCK	O	Serial clock output to mode control microprocessor.
48	MONO REC	O	Monaural/stereo recording switching signal. "H": when monaural recording.
49	AUDIO MUTE	O	Audio output mute signal. "H": mute.
50	TLV CHC		+5V power supply.
51	NC		Not used (open).
52	AVSS		AD converter system GND.
53	AVREF		AD converter system reference voltage. Connected to +5V.
54	AVDD		AD converter system power supply (5V).
55	NC		Not used. Connected to GND.
56	TAPE END	I	Tape end detection signal. Normally "L". "H" pulse: tape end.
57	TAPE TOP	I	Tape top detection signal. Normally "L". "H" pulse: tape top.
58	DEW	I	Dew condensation detection signal. "L" when dew condensation.
59	BATT SENSE	I	Battery voltage input for battery end detection. 1/2 divided by RB163.
60	ATF ERROR	I	ATF error, ATF lock error input.
61	S REEL FG	I	S reel FG signal input.
62	T REEL FG	I	T reel FG signal input.
63	NC	I	Not used. Connected to GND.
64	CAM VD	I	VD signal from camera circuit sync generator (IC710 on VC-135 board). V period pulse.
65	FLD	I	FIELD signal from camera circuit sync generator. 2V period pulse.
66	VTR SYNC	I	Composite sync signal separated from REC/PB Y signal.
67	SP/LP DET	I	Discriminates PB tape REC mode when CUE/REVIEW/FF and REW. "L": LP.
68	DRUM PG	I	Drum PG signal input. For drum phase servo. 26.7 msec period "H" pulse.
69	DRUM FG	I	Drum FG signal input. For drum speed servo. 4.4 msec period pulse.
70	CAP FG	I	Capstan FG signal input. For capstan speed servo. Approx. 1145.5 Hz when REC/PB. (SP mode)
71	DS ON	O	Data screen ON/OFF signal. "H": ON.
72	ME/MP	O	REC current switching signal. "H": ME tape.
73	TAPE LED ON	O	Tape LED ON/OFF signal. 200 msec period "H" pulse when REC/PB.
74	VA PB MODE	O	Video/audio circuit REC/PB switching signal. "H": PB.
75	CAP PWM	O	Capstan error signal output. 21.85 μ sec PWM signal.
76	DRUM PWM	O	Drum error signal output. 21.85 μ sec PWM signal.
77	CFG HMS	I	Capstan FG signal input. For tape counter.
78	S JACK IN	I	"L" when plug is inserted in S VIDEO terminal.
79	LANC IN	I	LANC serial data input.
80	LANC OUT	O	LANC serial data output.
81	LM LIM ON	I	Loading motor limiter ON detection signal. Normally "H". "L" when limiter ON.
82	Hi8 MP SW	I	Hi8 MP switch input. "L": Hi8 MP.
83	COMPOSIT REC	O	Video input/S video input switching signal. "H": video input.
84	CLOG DET	I	Head clog detection signal. "L" when no trouble.
85	REF PILOT	O	ATF servo reference pilot signal. Synchronized with drum rotation to output by selecting four frequencies. f1=101.024 kHz, f2=117.188 kHz, f3=162.760 kHz and f4=146.484 kHz.
86	NC	I	Not used, connected to GND.
87	NC	I	

Pin No.	Signal	I/O	Function
88	VSS		GND
89	VDD		+5 power supply.
90	VPP		
91	PB MUTE 2B	O	Head PB mute signal. Control signal for protecting crosstalk from the other three heads during PB. 4V period pulse when PB/REC ("L": only head during PB/REC). "L" when other cases.
92	PB MUTE 1B	O	
93	PB MUTE 2A	O	
94	PB MUTE 1A	O	
95	REC 2B	O	REC head (1A, 1B, 2A and 2B) select control signal. 4V period pulse when REC ("L": only head during REC). "H" when other cases.
96	REC 1B	O	
97	REC 2A	O	
98	REC 1A	O	
99	RF SWP	O	RF switching pulse signal. 25 Hz, 50% duty pulse.
100	1/2 RF SWP	O	1/2 RF switching pulse signal. 12.5 Hz, 50% duty pulse.

7-3. MODE CONTROL (MASTER) MICROPROCESSOR PIN FUNCTION (IC924 ON VC-135 BOARD: μ PD75316GF-397-3B9)

Pin No.	Signal	I/O	Function
1	S12	O	LCD SEG Pin drive signal. Four value pulses of 0V, 1.6V, 3.2V and 4.8V.
2	S13	O	
3	S14	O	
4	S15	O	
5	S16	O	
6	S17	O	
7	S18	O	
8	S19	O	
9	S20	O	
10	S21	O	
11	S22	O	
12	S23	O	
13	EEPROM CS	O	Chip select signal to EEPROM (IC923 on VC-135 board).
14	MK CS	O	Chip select signal to data code controller (IC262 on VS-101 board).
15	TO STBY	O	Controls 4fsc timing generator (IC801 on VC-135 board) when VTR mode. Normally "L".
16	IN/OUT	O	Video, audio input/output switching signal.
17	TITLE CS	O	Chip select signal to titler (IC707 on VC-135 board).
18	REMO CS	O	Chip select signal to SIRCS (infrared remote control) controller (IC926 on VC-135 board).
19	SRAM CS	O	Chip select signal to SRAM (title memory: IC707 on VC-135 board).
20	CAM CS	O	Chip select signal to camera microprocessor (IC702 on VC-135 board).
21	COM0	O	LCD COM Pin drive signal. Four value pulses of 0V, 1.6V, 3.2V and 4.8V.
22	COM1	O	
23	COM2	O	
24	COM3	O	
25	BIAS	O	4.8V LCD bias terminal.
26	VLC0	I	LCD drive bias pin.
27	VLC1	I	
28	VLC2	I	
29	KEY OUT 4	O	Key matrix output.
30	KEY OUT 5	O	V period "L" pulse output. "Hiz" when other cases.
31	SYSTEM RESET	O	Reset signal output of whole system. Normally "H". "L" when reset.
32	TALLY	O	ON/OFF signal of TALLY LED. "L" when LED is lit.
33	GND		GND
34	KEY OUT 0	O	Key matrix output. V period "L" pulse output. "Hiz" when other cases.
35	KEY OUT 1	O	
36	KEY OUT 2	O	
37	KEY OUT 3	O	
38	BATT IN	I	Main battery detection input. "L" when main battery is mounted.
39	SCK	I	Serial data transfer clock.
40	DATA TO SLV	O	Serial data output.
41	DATA TO MSTR	I	Serial data input.
42	SYSTEM SYNC	I	V SYNC from mechanism control microprocessor (IC153 on VS-101 board). Timing reference signal for communication, LANC, etc.
43	LI PRE END	I	Lithium battery preend detection input. "L" when no lithium battery or wasted.
44	LANC PWR ON	I	Power on signal input from wired remote control. "L": When remote control power switch is pressed.
45	TITLE BUSY	I	Title busy signal. Normally "L".

Pin No.	Signal	I/O	Function
46	VTR DD ON	O	VTR DC-DC converter control signal. "H": When power supply switch is set to "PLAYER" or "Camera".
47	CAMERA DD ON	O	CAMERA DC-DC converter control signal. "H": When power supply switch is set to "CAMERA".
48	VIDEO DA CS	O	Chip select signal to video, audio circuit EVR (ICs 304 to 306 on VS-101 board).
49	AUTO LOCK LED	O	Auto-lock LED ON/OFF signal. "H" when LED is lit.
50	VIDEO CS	O	Chip select signal to video Y signal process IC (IC401 on VS-101 board).
51	VTR COSMO CS	O	Chip select signal to mechanism control microprocessor (IC153 on VS-101 board).
52	SG CS	O	Chip select signal to SYNC generator (IC710 on VC-135 board).
53	CG STBY	O	Chip select signal to character generator (IC927 on VC-135 board).
54	VDD		+5V power supply.
55	XT1	I	32 kHz crystal oscillation circuit (for clock).
56	XT2		
57	NC		Connected to +5V.
58	X1	I	4.19 MHz crystal oscillation circuit (for system clock).
59	X2	I	
60	KEY IN 0	I	Key matrix input. V period "L" pulse input when corresponding key is pressed. "H" when other cases.
61	KEY IN 1	I	
62	KEY IN 2	I	
63	KEY IN 3	I	
64	KEY IN 4	I	
65	KEY IN 5	I	
66	KEY IN 6	I	
67	CC LOCK	I	Cassette compartment lock switch input. "L": lock.
68	RESET	I	Mode control microprocessor reset signal input. Normally "H". "L" when reset.
69	S0	O	LCD SEG Pin drive signal. Four value pulses of 0V, 1.6V, 3.2V and 4.8V.
70	S1	O	
71	S2	O	
72	S3	O	
73	S4	O	
74	S5	O	
75	S6	O	
76	S7	O	
77	S8	O	
78	S9	O	
79	S10	O	
80	S11	O	

7-4. INTERFACE

7-4-1. System Control – Video/Audio Block Interface (VS-101 BOARD)

NAME	I/O	No.	VTR MODE															CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB- PAUSE	FRAME	SLOW	SHUTTLE EDIT *14		REC *15	REC *15 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW				FWD	REV					FWD	RVS	FWD	RVS
SP/LP	O	IC153 ㉓	*1	H	H	*2	*2	*2	*2	*2	*1	*1	*1	*2	*2	*16	H/L	H/L	*16	*2	*2	H	H
VA PB MODE	O	IC153 ㉔	L	L	L	H	H	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
AUDIO MUTE	O	IC153 ㉕	L	L	L	H	H	L	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
VIDEO MUTE *13	O	IC153 ㉖	*3	*3	*3	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*3	*3	L	L	*4	*4	*4	*4
CAM/LINE	O	IC153 ㉗	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	L	L	L	L
JOG VD	O	IC153 ㉘	L	L	L	*5	*5	L	*5	*5	*5	*5	*5	L	*5	L	L	L	L	L	*5	L	*5
RP PB MODE	O	IC153 ㉙	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
FE ON	O	IC153 ㉚	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
1/2 RF SWP	O	IC153 ㉛	H	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
RF SWP	O	IC153 ㉜	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
PB MUTE 2B	O	IC153 ㉝	L	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	
PB MUTE 1B	O	IC153 ㉞																					
PB MUTE 2A	O	IC153 ㉟																					
PB MUTE 1A	O	IC153 ㊱																					
JOG	O	IC153 ㊲	L	L	L	H	H	L	H	H	H	H	H	L	H	L	L	L	L	L	H	L	H

*1. Outputs discrimination result of the mode just before. "H": SP mode, "L": LP mode.

*2. Outputs discrimination result of the REC mode of the playback tape. "H": SP mode, "L": LP mode.

*3. "L" when external input (video) present. "H" when other cases.

*4. "H" when tape no signal. "L" when other cases.

*5. False VD signal

*6. 12.5 Hz duty 50% pulse (synchronized with drum rotation)

*7. 25 Hz duty 50% pulse (synchronized with drum rotation)

*8. See time chart 1.

*13. "H" during load/unload of the CAMERA mode.

*14. Edit search pressed when playback pause mode.

*15. Adjustment mode.

*16. By REC MODE switch. "H": SP mode, "L": LP mode.

NAME	I/O	No.	VTR MODE															CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB PAUSE	FRAME	SLOW	SHUTTLE EDIT *14		REC *15	REC *15 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW				FWD	REV					FWD	RVS	FWD	RVS
REC2B	O	IC153 95	H	H	H	H	H	H	H	H	H	H	H	H	H	*9	H	H	*9	H	H	H	H
REC1B	O	IC153 96																					
REC2A	O	IC153 97																					
REC1A	O	IC153 98																					
SP/LP DET	I	IC153 67	L	*10	*10	*10	*10	L	*10	*10	*10			L	*10	H	H	H	H	L	*10	L	*10
CLOG	I	IC153 84	H	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	H	*11	*11	H	*11	*11	*11	*11
VTR SYNC	I	IC153 66	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12

*9. See time chart 2.

*10. "H": SP recording area on tape. "L": LP recording area.

*11. "H": no recording area or drop out area on tape. Head clog detection input.

*12. Composite sync signal input separated from line input video signal, camera video signal or playback video signal. (polarity +)

*14. Edit search pressed when playback pause mode.

*15. Adjustment mode.

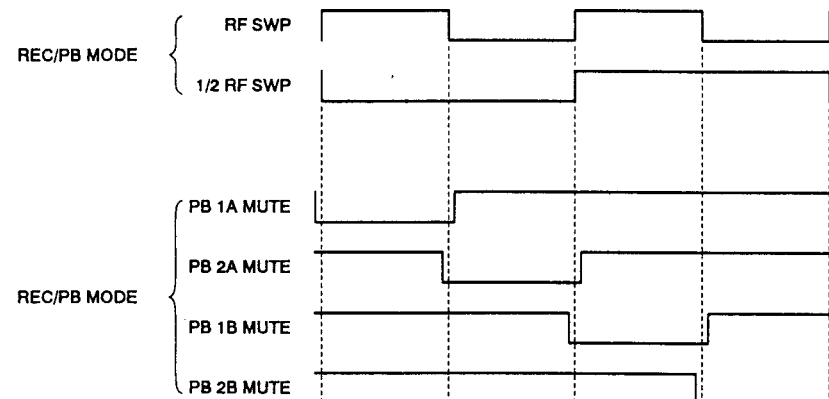
7-4-2. System Control – Servo Block Interface (VS-101 Board)

NAME	I/O	No.	VTR MODE															CAMERA MODE							
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB- PAUSE	FRAME	SLOW	SHUTTLE EDIT *13		REC *14	REC *14 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW			
						CUE	REVIEW		CUE	REVIEW				FWD	REV					FWD	RVS	FWD	RVS		
T.REEL FG	I	IC153 ⑥②	—	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	—	—	*1	*1	*1	*1	*1		
S.REEL FG	I	IC153 ⑥①	—	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	—	—	*1	*1	*1	*1	*1		
ATF ERROR	I	IC153 ⑥⑤	—	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2		
DRUM PG	I	IC153 ⑥⑧	—	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3		
DRUM FG	I	IC153 ⑥⑨	—	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4		
CAP FG/ CFG HMS	I	IC153 ⑦①, ⑦②	—	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5		
CAP ON	O	IC153 ①	L	H	H	H	H	H	H	H	L	*8	*8	H	H	H	L	L	H	H	H	H	H		
REF PILOT	O	IC153 ⑧⑤	*7	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6		
RP PB MODE	O	IC153 ③	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H		
DRUM FWD/RVS *10	O	IC153 ⑤⑤	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H		
CAP FWD/ RVS	O	IC153 ②	L	H	L	H	L	H	H	L	L	*8	*8	H	L	H	L	L	H	H	L	H	L		
DRUM PWM	O	IC153 ⑦⑥	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9		
CAP PWM	O	IC153 ⑦⑤	L	*9	*9	*9	*9	*9	*9	*9	L	*9	*9	*9	*9	*9	L	L	*9	*9	*9	*9	*9		
LM LIM CONT *11	O	IC153 ③③	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L		
DRUM ON *12	O	IC153 ④④	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H		

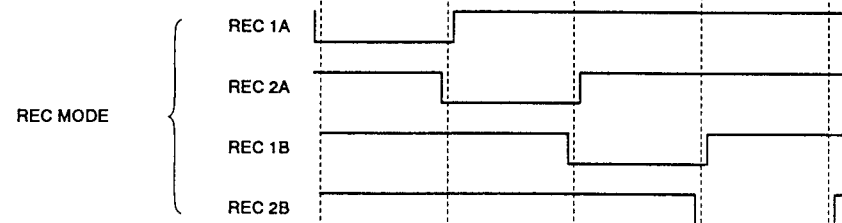
- *1. Pulse input amplitude modulated by reel rotation. (200 msec period when REC/PB)
- *2. ATF error voltage input
- *3. One PG pulse input per one drum rotation, approx. 37.5 Hz.
- *4. Six PG pulses input per one drum rotation, approx. 225 Hz.
- *5. 360 FG pulses input per one capstan rotation. Approx. 1145.5 Hz when REC/PB (SP).
- *6. Four frequencies output synchronized with drum rotation. f1=101.024 kHz, f2=117.188 kHz, f3=162.760 kHz and f4=146.484 kHz

- *7. f2 (117.188 kHz) output
- *8. "H" pulse when tape run.
- *9. 21.85 μ sec period PWM signal
- *10. Normally "H". Temporary "L" only when load/unload (drum reverse rotation).
- *11. Temporary "H" only when cassette loading (finger catch protection).
- *12. "H": approx. 1.3 Vdc
- *13. Edit search pressed when playback pause mode.
- *14. Adjustment mode.

TIME CHART 1



TIME CHART 2



SECTION 8

CAMERA SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 234.

8-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

8-1-1. List of Service Tools

- Oscilloscope
- Stabilized power supply
- Vectorscope
- Adjusting driver
- Color monitor
- Digital voltmeter

Ref. No.	Name	Part Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	Max gain adjustment (2 used) White balance check
	ND filter 0.4	J-6080-806-A	Max gain adjustment
	ND filter 0.3	J-6080-818-A	White balance adjustment
	ND filter 0.1	J-6080-807-A	Max gain adjustment
J-3	Pattern box PTB-500	J-6029-140-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote control unit (RM-95-remodeled in part) ^{Note 1}	J-6082-053-B	
J-6	Siemens star	J-6080-875-A	For checking flange back
J-7	Measuring pin jig for camera section	J-6082-139-A	For camera section adjustment
J-8	Measuring pin jig for video section	J-6082-140-A	For video section adjustment
J-9	Extension cord (48P, 0.8 mm)	J-6082-177-A	For extension between CF-4 board and VC-135 board (CN922)
J-10	Extension cord (24P, 0.8 mm)	J-6082-178-A	For extension between VD-22 board (CN001) and SE-26 board (CN101) (During the repair of the camera section)
J-11	Relay board (21P, 0.5 mm) ^{Note 2}	J-6082-176-A	For extension between the lens block (FPC) and VC-135 board (CN851) (During the repair of the camera section)
J-12	Extension cord (16P, 0.8 mm)	J-6082-136-A	For extension between CD-108 board (CN301) and VC-135 board (CN801) (During the repair of the camera section)
J-13	Extension cord (20P, 0.5 mm) ^{Note 2}	J-6082-138-A	For extension between the lens block (FPC) and VC-135 board (CN851) (During the repair of the camera section)

Note 1: If the micro processor IC in the adjusting remote control unit is not the new micro processor (UPD7503G-C56-12), the switchover of the page cannot be carried out. In this case, replace with the new micro processor (8-759-148-35).

Note 2: The extension code (J-6082-138-A) is also attached with a 21P, 0.5 mm code. Connect this code to the relay board (J-6082-176-A) for extensions between the lens block (FPC) and VC-135 board (CN851).

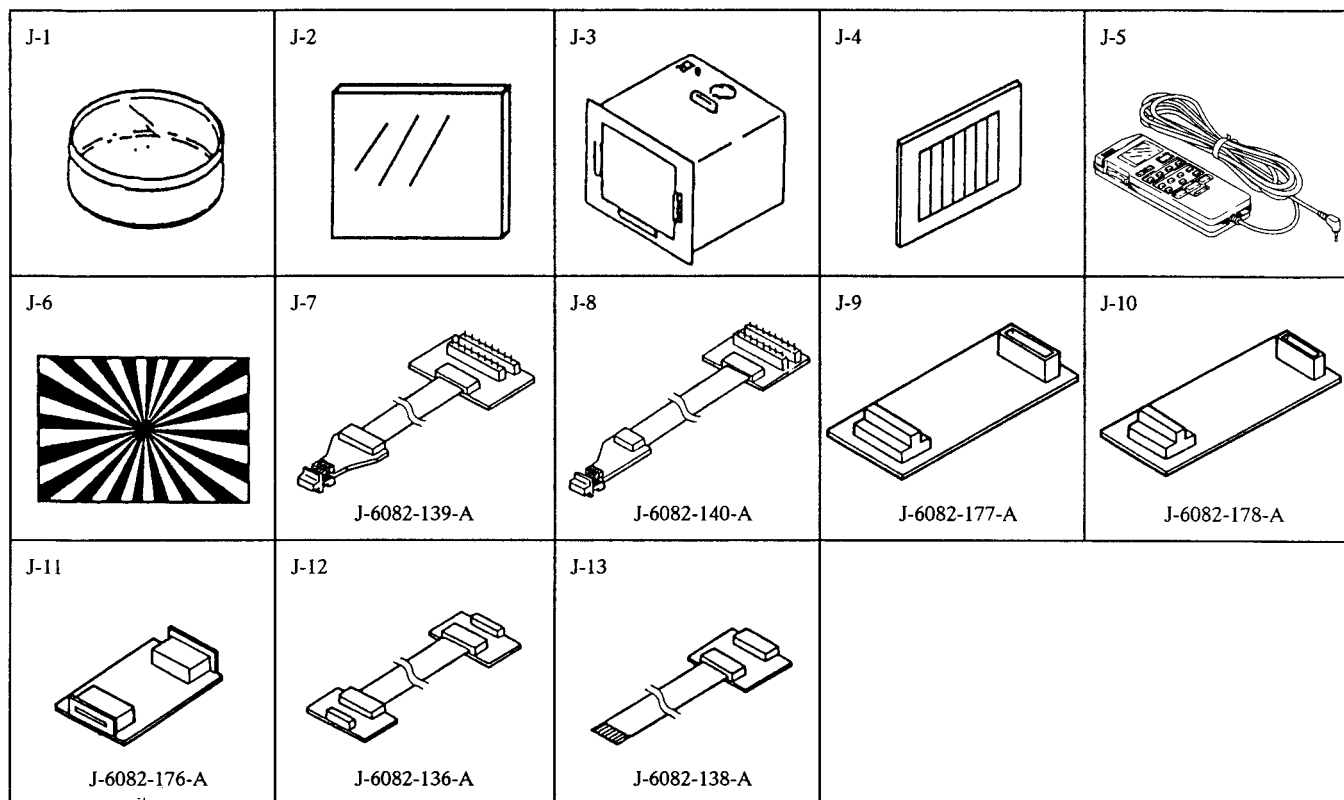


Fig. 8-1.

8-1-2. Preparations

Note 1: For further details on how to remove the cabinet and each board, refer to "2. Disassembly".

Note 2: When performing adjustments only, it is not necessary to separate the lens block and VC-135 board.

- 1) Connect the equipments for adjustment as shown in Fig. 8-3.
- 2) It is not necessary to connect the front panel assembly (including the MA-174 and RM-68 boards) and AU-151 board (audio board).
- 3) The EVF (Electronic viewfinder) is required for checking the white balance mode and shutter speeds. The same contents will be displayed on the monitor TV by turning on the data screen. If the EVF is not required, remove the VS-101 board CN301.

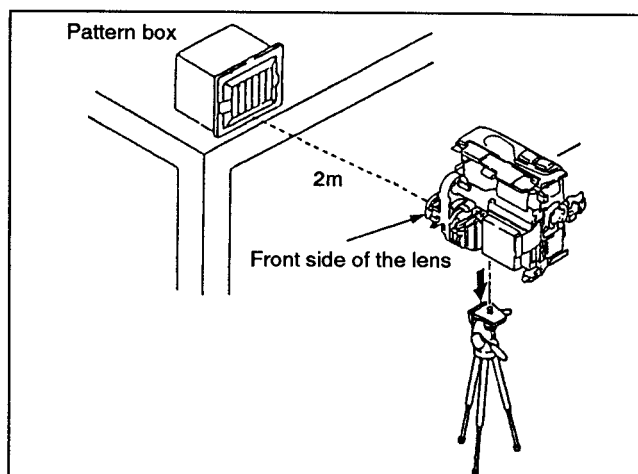


Fig. 8-2.

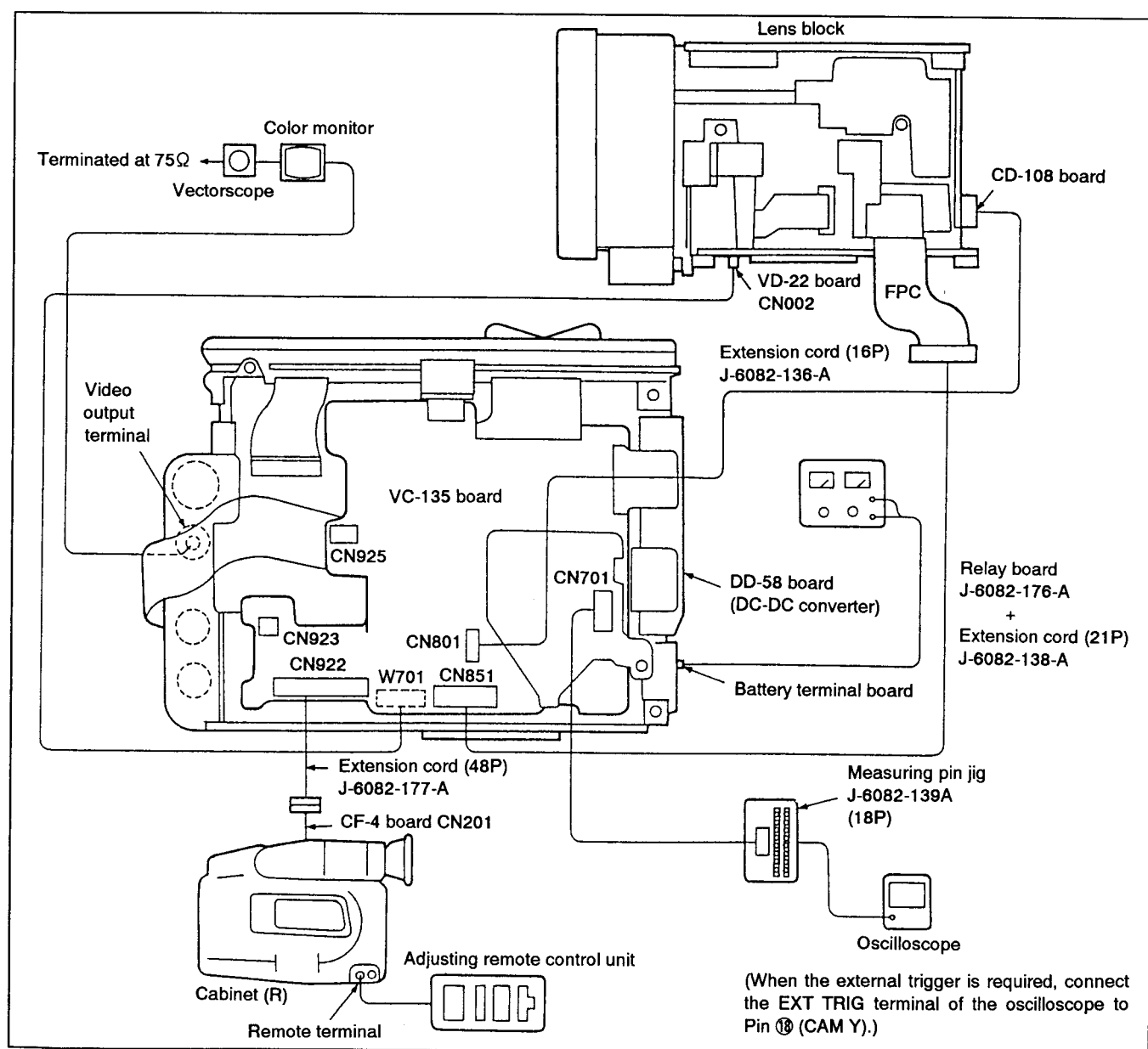


Fig. 8-3.

8-1-3. Precautions

1. Switch settings

Adjust the switches to the following positions, and perform the adjustments without inserting the tape, unless specified otherwise.

1. Camera/player power switch (FK-4 board S119) Camera
2. Standby switch (FK-4 board S118) Standby
3. Steady shot switch (CF-4 board S216) Off
4. Auto-lock switch (CF-4 board S217) Off
5. Focus button (CF-4 board S213) Manual
6. Shutter speed button (CF-4 board S312) Normal (1/50)
7. Brightness button (CF-4 board S211) Automatic

2. Adjustment Procedure

Perform in the given order as a rule.

3. Subject

- 1) Color bar chart (Standard picture frame)
Adjust the picture frame as shown in Fig. 8-4. if adjustments are performed using the color bar chart.
(Standard picture frame)
- 2) White pattern (Standard picture frame)
Remove the color bar chart from the pattern box, and adjust the zoom lever so that the white pattern becomes the same size and is in the same position as the color bar chart
(Standard picture frame).

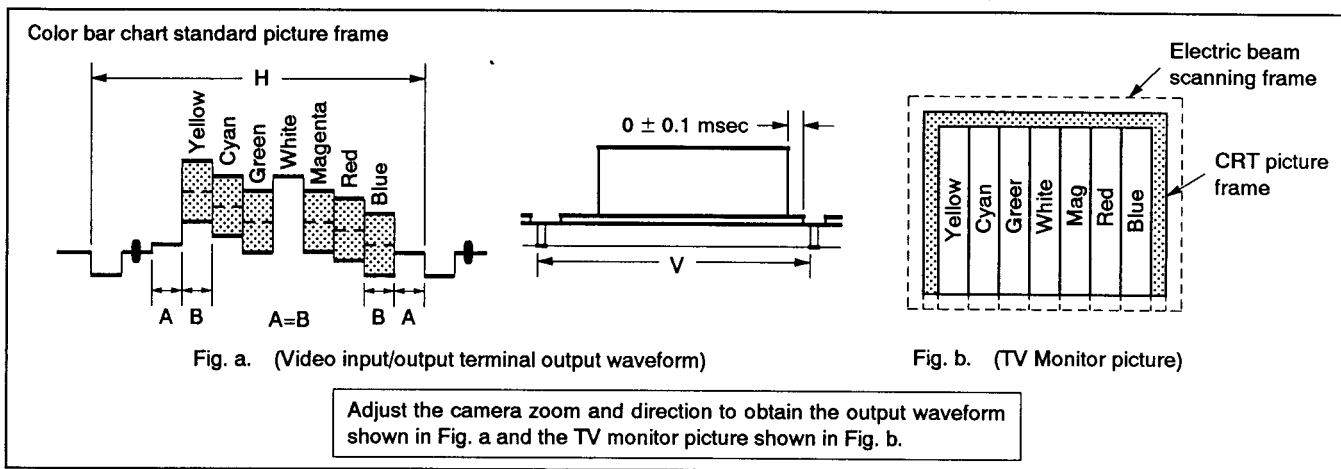


Fig. 8-4.

3) Chart for flange back adjustment

Combine a white A0 size (1189 mm × 841 mm) paper to a black one, and make the chart shown in Fig. 8-5.

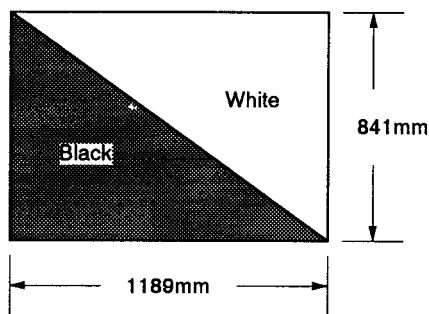


Fig. 8-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

8-1-4. Adjusting Remote Control Unit

The camera section is adjusted by changing the constant and the coefficient of the digital signal processing calculation, or modifying the output voltage of EVR IC (VC-135 board IC705). These processes are carried out by the camera micro processor (VC-135 board IC702). This micro processor reads the data written in the non-volatile memory (VC-135 board IC701: EEPROM), and transmits it to the digital signal processing circuit and EVR.

The adjusting remote control unit is used for rewriting the adjustment data written in the non-volatile memory necessary for performing the adjustments.

The adjusting remote control unit uses the remote control signal line (LANC) to correspond mutually with the camera micro processor. The page, address and the up/down command of the data can be transmitted from the remote control unit to the camera micro processor. On the other hand, the page, address, and data can also be transmitted the other way round.

1. Using the adjusting remote control unit

- 1) Connect the adjusting remote control unit to the remote terminal (LJ-13 board J511).
- 2) Adjust the HOLD switch of the adjusting remote control unit to HOLD (SERVICE position).
If it has been properly connected, the LCD on the adjusting remote control unit will show the display in Fig. 8-6.

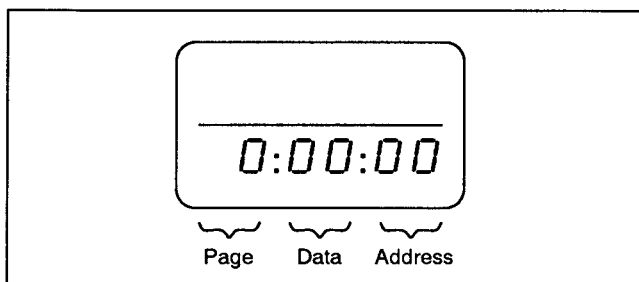


Fig. 8-6.

- 3) Operate the adjusting remote control unit as follows.

- Changing the page

The page will increase when the EDIT SEARCH+ button is pressed. It will decrease when the EDIT SEARCH- button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Display on LCD	0	1	2	3	4	5	6	7	8	9	A	b	c	d	e	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 8-1.

- Changing the address

The address will increase when the FF (▶▶) button is pressed, and decrease when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF. However, the addresses which are not used for the adjustments will not be displayed.

- Changing the data (Data setting)

The data will increase when the PLAY (▶) button is pressed, and decrease when the STOP (■) button is pressed.

There are altogether 256 data, from 00 to FF.

- Writing the adjustment data

It is necessary to press the PAUSE button to write the adjustment data (F page, E page, D page) in the non-volatile memory.

(The new adjustment data will not be recorded in the non-volatile memory if this operation is not performed.)

- 4) Select page: 6, address: 00, and adjust the data to 01 (window OFF adjustment mode) or 11 (window ON adjustment mode). This releases the write protect of page F, and the camera section (F page) can be adjusted.

(To adjust the titler system (D page), adjust the data of page: 01, address: 00 to 01, and release the protect of page D.)

- 5) After completing all adjustments, turn off the main power (6.3V) once. This can release the adjustment mode (adjustment modes other than page E and page F).

2. Precautions upon using the adjusting remote control unit

The correct adjustment data may be erased at times, due to operation errors of the adjusting remote control unit. To prevent this from occurring, it is recommended that all adjustment data be recorded in the memory before beginning adjustments, and the new adjustment data be recorded in the memory after each adjustment.

8-1-5. Page F Address List

Note 1: The data listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are the values immediately after performing "Page F, Page E Data Initialization" and "Page F, Page E Data Modification". They are different from the values after performing all the adjustments.

Address	Name	Function [] Indicate the adjustment voltage output terminal	Adjustment data							
			Initial value	Memo column						
00	ID	Set ID	51	51						
01	FADER LEVEL	AE REF level modification during fader	E0	E0						
02	FADER ENDTIM	The setting of the AE REF modulation time during fader	10	10						
03	CS SL	Carrier balance adjustment	35							
04	VSUB	CCD imager V SUB adjustment [IC705 ③]	80							
05	VP GH	CCD imager VRG adjustment [IC705 ④]	80							
06	VREF Y	Camera core Y D/A standard voltage, SYNC level adjustment [IC705 ⑤]	7B							
07	VREF C	Camera core CHROMA D/A standard voltage, BURST level adjustment [IC705 ⑥]	99							
08	HALL GAIN	Hall amplifier gain adjustment [IC705 ⑦]	} HALL adjustment	75						
09	HALL OFFSET	Hall amplifier offset adjustment [IC705 ⑧]		79						
0A	E LOWLIGHT START	Low luminance intensity REF level modulation start setting	20	20						
0B	REF 2V	2V standard voltage for hall device [IC705 ⑫]	68	68						
0C	AD REF	Black level setting during A/D conversion, A/D off set adjustment [IC705 ⑬]	72							
0D	CORE DETH	CCD correction control	04	04						
0E	CORE VTR DELAY	1HDL longitudinal setting during VTR playback	16	16						
0F	CORE APCN4	Horizontal aperture setting	B5	B5						
10	CORE APCN5	Vertical aperture setting	3F	3F						
11	CORE EFECT	Special effect control	A0	A0						
12	CORE MATR	BLUE matrix constant	26	26						
13	CORE MATB	RED matrix constant	6D	6D						
14	CORE BURST LEVEL	Burst flag level setting, color modulation ON/OFF<table><tr><td>Data</td><td>Adjustment mode</td></tr><tr><td>38</td><td>Normal level</td></tr><tr><td>3A</td><td>Color modulation stopped</td></tr></table>	Data	Adjustment mode	38	Normal level	3A	Color modulation stopped	38	38
Data	Adjustment mode									
38	Normal level									
3A	Color modulation stopped									
15	CORE CHROMA DLY	Y/C delay adjustment	04	04						
16	CORE Y SETUP	Set up level setting	02	02						
17	CORE VHAPCN	Slice and level setting of the aperture signal	16	16						
18	CORE B-Y GAIN	B-Y GAIN	} Color reproduction adjustments	13						
19	CORE R-Y GAIN	R-Y GAIN		11						
1A	CORE R-Y HUE	R-Y HUE		00						
1B	CORE B-Y HUE	B-Y HUE		00						
1C	CS/APCCUT	Low luminance intensity aperture and chroma suppress level	24	24						

Table 8-2 (1).

Address	Name	Function [] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
1D	NEXT LINE DEFECT BIT	CCD correction pattern	00	
1E	CCD DEFECT0	CCD correction data	00	
1F	CCD DEFECT1	CCD correction data	00	
20	CCD DEFECT2	CCD correction data	00	
21	CCD DEFECT3	CCD correction data	00	
22	CCD DEFECT4	CCD correction data	00	
23	CCD DEFECT5	CCD correction data	00	
24	CCD DEFECT6	CCD correction data	00	
25	CCD DEFECT7	CCD correction data	00	
26	CCD DEFECT8	CCD correction data	00	
27	CCD DEFECT9	CCD correction data	00	
28	CCD DEFECT10	CCD correction data	00	
29	CCD DEFECT11	CCD correction data	00	
2A	CCD DEFECT12	CCD correction data	00	
2B	CCD DEFECT13	CCD correction data	00	
2C	CCD DEFECT14	CCD correction data	00	
2D	RREF L	3200k Red standard data LSB	72	
2E	RREF H	3200k Red standard data MSB	5F	
2F	GREF L	3200k Green standard data LSB	D4	
30	GREF H	3200k Green standard data MSB	63	
31	BREF L	3200k Blue standard data LSB	3B	
32	BREF H	3200k Blue standard data MSB	2C	
33	RCONTREF	3200k RCONT adjustment value	42	
34	BCONTREF	3200k BCONT adjustment value	4A	
35	AWB NOWM R	Red regular correction coefficient	7E	
36	AWB NORM B	Blue regular correction coefficient	96	
37	AWB SHUT IN	Indoor determination shutter data	A8	A8
38	ABW SHUT OUT	Outdoor determination shutter data	A0	A0
39	AWB IRIS IN	Indoor determination hall data	79	
3A	AWB IRIS OUT	Outdoor determination hall data	7F	
3B	AWB G LEVEL	High luminance section green integral level	02	02
3C	AWB G WIDTH	High luminance section green integral level range	03	03
3D	DMAT HUE	Variable linear matrix HUE coefficient	00	
3E	DMAT GAIN	Variable linear matrix GAIN coefficient	00	
3F	AWB SELECT	AWB mode selection	00	00
40	AWB DIFF	Standard difference from the outdoor fixed value	0A	0A
41	AWB BOTTOM SLP R	AWB incoming frame bottom R coefficient	30	30
42	AWB BOTTOM SLP B	AWB incoming frame bottom B coefficient	58	58
43	AWB MIDDLE SLP R	AWB incoming frame middle R coefficient	62	62
44	AWB MIDDLE SLP B	AWB incoming frame middle B coefficient	47	47
45	AWB TOP SLP R	AWB incoming frame top R coefficient	6C	6C
46	AWB TOP SLP B	AWB incoming frame top B coefficient	1A	1A

Table 8-2 (2).

Address	Name	Function [] Indicate the adjustment voltage output terminal	Adjustment data									
			Initial value	Memo column								
47	AWB KEIKO R	AWB incoming frame fluorescent light R coefficient	66	66								
48	AWB KEIKO B	AWB incoming frame fluorescent light B coefficient	18	18								
49	AWB BOTTOM UP	AWB incoming frame bottom upper value	8C	8C								
4A	AWB BOTTOM DWN	AWB incoming frame bottom lower value	6B	6B								
4B	AWB MIDDLE UP	AWB incoming frame middle upper value	B8	B8								
4C	AWB MIDDLE DWN	AWB incoming frame middle lower value	9F	9F								
4D	AWB TOP UP	AWB incoming frame top upper value	80	80								
4E	AWB TOP DWN	AWB incoming frame top lower value	66	66								
4F	AWB KEIKO	AWB incoming frame fluorescent light output lower value	6C	6C								
50	AWB KEIKO DWN	AWB incoming frame fluorescent light lower value	5C	5C								
51	AWB R TOP LMT	AWB incoming frame Rcont upper value	6C	6C								
52	AWB R DWN LMT	AWB incoming frame Rcont lower value	20	20								
53	AWB B TOP LMT	AWB incoming frame Bcont upper value	83	83								
54	AWB B IN TOP	AWB incoming frame Bcont	67	67								
55	AWB B IN MAX	AWB incoming frame Bcont	5C	5C								
56	AWB B OUT MIN	AWB incoming frame Bcont	5C	5C								
57	AWB B OUT DWN	AWB incoming frame Bcont	4A	4A								
58	AWB B DWN LMT	AWB incoming frame Bcont lower value	20	20								
59	AWB LL LMT	Low luminance intensity limiter	06	06								
5A	AWB T M DIVID	AWB incoming frame upper, middle border value	5B	5B								
5B	AWB B M DIVID	AWB incoming frame middle, lower border value	3C	3C								
5C	AWB DELAY TM	AWB tracking speed <table><tr><td>Data</td><td>Adjustment mode</td></tr><tr><td>01</td><td>High speed tracking mode</td></tr><tr><td>0C</td><td>Normal</td></tr></table>	Data	Adjustment mode	01	High speed tracking mode	0C	Normal	0C	0C		
Data	Adjustment mode											
01	High speed tracking mode											
0C	Normal											
5D	AWB FAST TM	AWB initial high speed tracking amount	40	40								
5E	AWB OUT HYS OFF	AWB outdoor hysteresis off difference	0C	0C								
5F	AWB OUT B HYS	AWB outdoor hysteresis amount	06	06								
60	AWB MODE	AWB adjustment mode <table><tr><td>Data</td><td>Adjustment mode</td></tr><tr><td>00</td><td>Normal</td></tr><tr><td>D0</td><td>AWB adjustment mode</td></tr><tr><td>F1</td><td>Sampling display mode</td></tr></table>	Data	Adjustment mode	00	Normal	D0	AWB adjustment mode	F1	Sampling display mode	00	00
Data	Adjustment mode											
00	Normal											
D0	AWB adjustment mode											
F1	Sampling display mode											
61	AE REFL	Reference value (lower) for AE	00	00								
62	AE REFH	Reference value (upper) for AE	1B	1B								
63	AGC MIN	AGC MIN value (AGCREF value), IRIS level adjustment	E3									
64	AE MIML	Low luminance intensity side limiter (MAXGAIN), MAX GAIN adjustment	32									
65	AE MAXL	High luminance intensity side limiter (lower)	80	80								
66	IRIS OFFSET	Iris ROM table OPEN side offset	D0	D0								
67	AE KEISU	Correction coefficient during detection weighting	00	00								

Table 8-2 (3).

Address	Name	Function [] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
68	AE FUNCTION	SW for turning each AE function ON and OFF	42	42
69	BL HOSEIH	Forcible back light level setting (upper)	40	40
6A	JITEISU DOWN	Constant during loop response, DOWN side	28	28
6B	JITEISU UP	Constant during loop response, UP side	0D	0D
6C	AE KNEE	KNEE setting value for AE	FF	FF
6D	ORETEN SET	Variable point due to time constant error amount	13	13
6E	OMOMIOUT	Outer frame weighting amount	40	40
6F	AFC WIDE	Coefficient required for the ANF integral loop	03	03
70	AFC GAIN	Loop gain of the flickerless loop	01	01
71	AFC LIMIL	Limiter corresponding to the error rate (Lower)	60	60
72	HIST P KEISU	Histocomp level setting P for counter light determination	20	20
73	HIST H KEISU	Histocomp level setting H for counter light determination	E0	E0
74	HIST L KEISU	Histocomp level setting L for counter light determination	90	90
75	GYKOU JITEISU	Constant during auto back light response	08	08
76	SUBN LIMIT	Limiter for counter light determination	40	40
77	FUZZY RULE1	Correction amount 1 for auto back light	90	90
78	FUZZY RULE2	Correction amount 2 for auto back light	C0	C0
79	FUZZY RULE3	Correction amount 3 for auto back light	B0	B0
7A	FUZZY RULE4	Correction amount 4 for auto back light	A0	A0
7B	FUZZY RULE5	Correction amount 5 for auto back light	70	70
7C	FUZZY RULE6	Correction amount 6 for auto back light	80	80
7D	FUZZY RULE7	Correction amount 7 for auto back light	A0	A0
7E	FUZZY RULE8	Correction amount 8 for auto back light	98	98
7F	FUZZY RULE9	Correction amount 9 for auto back light	90	90
80	FUZZY RULE10	Correction amount 10 for auto back light	78	78
81	IRIS MIN L	Not used		
82	IRIS MIN H	Not used		
83	DELTA SHUT GAIN	Not used		
84	AE WAKUH	Frame data for AE detection (vertical line)	0F	0F
85	AE WAKUV	Frame data for AE detection (horizontal line)	4F	4F
86	WIDE LIMIT	ZOOM limiter WIDE (lower)	DE	
87	WIDE LIMITH	ZOOM limiter WIDE (upper)	02	
88	TELE LIMIT	ZOOM limiter TELE (lower)	22	
89	TELE SIMITH	ZOOM limiter TELE (upper)	1D	
8A	STEP ZERO	Flange back value	65	
8B	STEP ZERO SPAN (VAP ONLY)	Flange back value 2	BE	
8C	ZOOM SPD FAST	Zoom speed (fast)	73	73
8D	ZOOM SPD SUPER	Zoom speed (For adjustment)	76	76
8E	ZS INIT SLOW	Zoom speed initial value (slow)	76	76
8F	ZS INIT FAST	Zoom speed initial value (fast)	76	76
90	ZMSPD DAMIN	Zoom speed D/A MIN value	3D	3D
91	ZS K	Zoom servo coefficient K	11	11

Table 8-2 (4).

Address	Name	Function [] Indicate the adjustment voltage output terminal	Adjustment data																									
			Initial value	Memo column																								
92	ZS L	Zoom servo coefficient L	04	04																								
93	ZP HYS	Zoom potential hysteresis	03	03																								
94	ZOOM SPD SLOW	Zoom speed (slow)	29	29																								
95	AF MD2THL	MODE2 THR	20	20																								
96	MAXCHG THR	MAX value renewal THR	1A	1A																								
97	ERR THL	Wobbling width THR	18	18																								
98	WOB INTV	Wobbling second interval	04	04																								
99	ERRPOL THR	MODE2 error possible THR	13	13																								
9A	MAXCHK THR	MAX CHECK THR	12	12																								
9B	REWOB THR	Wobbling second THR	0A	0A																								
9C	MODE2 INOUT	MODE2 speed switchover	8B	8B																								
9D	SMLWD THR	Small frame THR	0A	0A																								
9E	ZOOM PULSE LIMIT	Maximum zoom pulse value	EE	EE																								
9F	ZOOM RIZE	Zoom rise minimum speed time	0A	0A																								
A0	FB CURVEPEAKL	Constant for flange back adjustment	F5	F5																								
A1	FB CURVEPEAKH	Constant for flange back adjustment	0B	0B																								
A2	FB ZOOMSH	Constant for flange back adjustment	5D	5D																								
A3	FB ZOOMSH	Constant for flange back adjustment	06	06																								
A4	LIMITREST WIDE	Zoom limiter WIDE side	14	14																								
A5	LIMITREST TELE	Zoom limiter TELE side	0F	0F																								
A6	FB PEAKTHR	Constant for flange back adjustment	FF	FF																								
A7	FB FOCUSZERO	Constant for flange back adjustment	1C	1C																								
A8	DET IRIS ALT	Iris variation check THR	02	02																								
A9	DET AGC ALT	AGC variation check THR	02	02																								
AA	LIMIT INSURANCE	Focus limiter insurance value	02	02																								
AB	FOCUS MODE	Focus mode <table><tr><td>Data</td><td>Adjustment mode</td></tr><tr><td>08</td><td>Zoom, Focus fixed</td></tr><tr><td>00</td><td>Normal</td></tr></table>	Data	Adjustment mode	08	Zoom, Focus fixed	00	Normal	00	00																		
Data	Adjustment mode																											
08	Zoom, Focus fixed																											
00	Normal																											
AC	LENS ADJ MODE	Flange back adjustment mode <table><tr><td>Data</td><td>Adjustment mode</td></tr><tr><td>00</td><td>Nomal</td></tr><tr><td>01</td><td>Flange back adjustment</td></tr></table>	Data	Adjustment mode	00	Nomal	01	Flange back adjustment	00	00																		
Data	Adjustment mode																											
00	Nomal																											
01	Flange back adjustment																											
AD	LENS EMRG	Lens emergency	00	00																								
AE	NTSC PAL/H DEF	DELAY bit=0: NTSC, 1: PAL, bit4-7=CCD correction delay	19	19																								
AF	FT SW	DDS display mode switchover <table><tr><td>Data</td><td>DDS display mode</td><td>Data</td><td>DDS display mode</td></tr><tr><td>00</td><td>Y sampling display</td><td>40</td><td>HALL data display</td></tr><tr><td>01</td><td>B-Y display</td><td>82</td><td>R ratio display</td></tr><tr><td>02</td><td>R-Y display</td><td>83</td><td>B ratio display</td></tr><tr><td>03</td><td>R-Y, B-Y display</td><td>B0</td><td>Focus step display</td></tr><tr><td>21</td><td>Normal</td><td></td><td></td></tr></table>	Data	DDS display mode	Data	DDS display mode	00	Y sampling display	40	HALL data display	01	B-Y display	82	R ratio display	02	R-Y display	83	B ratio display	03	R-Y, B-Y display	B0	Focus step display	21	Normal			21	21
Data	DDS display mode	Data	DDS display mode																									
00	Y sampling display	40	HALL data display																									
01	B-Y display	82	R ratio display																									
02	R-Y display	83	B ratio display																									
03	R-Y, B-Y display	B0	Focus step display																									
21	Normal																											

Table 8-2 (5).

Address	Name	Function [] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
B0	CORE OTHER	Core mode data 13 byte	36	36
B1	CORE Y GAIN	0 byte Y gain of core field data	3C	3C
B2	LOW LIGHT CS	Low luminance intensity, color erasure start point	80	80
B3				
B4	E LOWLIGHT START 2	Low luminance intensity REF level modulation start setting 2	80	80
B5	E LOWLIGHT LEVE	Low luminance intensity REF level modulation start setting	F0	F0
B6	ZOOM DROP 1	F-No drop due to zoom lens (1)	60	60
B7	ZOOM DROP 2	F-No drop due to zoom lens (2)	75	75
B8				
B9				
BA	AWB IN B HYS	AWB indoor B hysteresis amount	04	04
BB	AWB IN R HYS	AWB indoor R hysteresis amount	02	02
BC	AWB KAKE NORM R	Set to 1000H by multiplying with reference value of ADR: 35 (NORM R)	20	20
BD	AWB KAKE NORM B	Set to 1000H by multiplying with reference value of ADR: 36 (NORM B)	40	40
BE	MF STEP CHNGE	MODE2 THR coefficient	06	06
BF	ZOOM SPEED SUPER SLOW		07	07
C0	ZOOM INT SUPER SLOW		14	14
C1	AF CONTROL FLAG		0E	0E
C2	AE Y THR	AE variation THR. 1 during low luminance intensity	28	28
C3	AE Y MIN	AE variation THR. 2 during low luminance intensity	20	20
C4	MD2 SPD	Focus speed during MODE2	61	61
C5	AE CHECK	Re-start up AE THR	10	10
C6	LOWCON THR	LOW CON determination THR.1 during MODE2	10	10
C7	LOWCON THR 2	LOW CON determination THR.2 during MODE2	20	20
F0		Input column of the unit ID No., etc. Not related to unit operations.	FF	
F1			FF	
F2			FF	
F3			FF	
F4			FF	
F5			FF	
F6			FF	
F7			FF	
F8			FF	
F9			FF	
FA			FF	
FB			FF	
FC			FF	
FD			FF	
FE			FF	
FF			FF	

Table 8-2 (6).

8-1-6. Page E Address List

Note 1: The data listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are the values immediately after performing "Page F, Page E Data Initialization" and "Page F, Page E Data Modification". They are different from the values after performing all the adjustments.

Address	Name	Function [] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
00	a0 V SENSOR GAIN	Pitch adjustment gain	80	
01	a1 V SENSOR GAIN	YAW adjustment gain	80	
02	a1 COMPLETE		00	00
03	a0 V LIMIT 1	PITCH initial limiter	FF	FF
04	a0 V LIMIT 2	Loop limiter in PITCH integral	7F	7F
05	a0 V CORE VALUE	PITCH core ring	10	10
06	a0 V K HPF	PITCH HPF feedback coefficient	FF	FF
07	a1 H LIMIT 1	YAW initial limiter	FF	FF
08	a1 H LIMIT 2	Loop limiter in YAW integral	7F	7F
09	a1 H CORE VALUE	YAW core ring	10	10
0A	a1 H K HPF	YAW HPF feedback coefficient	FF	FF
0B	a0 K TABLE	PITCH and YAW integral feedback coefficient table	04	04
0C	a0 ADLP CENTER PITCH	Vertical angle sensor (PITCH) input	00	00
0D	a0 ADLP CENTER PITCH+1	Vertical angle sensor (PITCH) input	80	80
0E	a0 ADLP CENTER YAW	Vertical angle sensor (YAW) input	00	00
0F	a0 ADLP CENTER YAW+1	Vertical angle sensor (YAW) input	80	80
10	a0 V REF CENTER	PITCH PWM center value	00	00
11	a0 V REF CENTER+1	PITCH PWM center value	08	08
12	a1 H REF CENTER	YAW PWM center value	00	00
13	a1 H REF CENTER+1	YAW PWM center value	08	08

Table 8-3.

8-1-7. Page 6, Page 1 Address List

The camera adjustment mode can be set by performing the following data settings at page: 6 or page: 1. (These page data can be set temporary, but when the main power (6.3V) is turned off, the original value (normal value) will be returned.

Therefore, these adjustment modes can be released very simply by turning the main power off.)

(Example) The camera adjustment mode (window OFF) is set by setting data: 01 to page: 6, address: 00. The F page write protect will also be released.

1. Page 6

Address	Adjustment Mode	Data	Function
00	Camera adjustment mode	01 10 11	Camera adjustment mode (window OFF), F page write protect released Normal Camera adjustment mode (window ON), F page write protect released
01	Camera adjustment switch Note: To set this address adjustment mode, it is necessary to press the PAUSE button of the adjusting remote control unit after setting the data.	00 01 03 05 07 09 0B 0D 0F 11 13 15 1D	Normal IRIS OPEN, AGC HOLD IRIS CLOSE1, AGC HOLD IRIS CLOSE2, AGC MIN IRIS CLOSE3, AGC MAX ND0.5 SHUTTER (PAL=1/160, NTSC=1/190) ND0.8 SHUTTER (PAL=1/320, NTSC=1/380) AWB PRESET1: 3200K PRESET DATA take in WB 3200K PRESET: Indoor white balance mode AWB PRESET2: 3200K PRESET DATA take in ZOOM HUNTING1 ZOOM SPDSLOW ZOOM HUNTING2 ZOOM SPDFAST EEPROM PRE WRITE: Page F, Page E initial data write
05	Shutter mode	00 to 04 05	1/50 1/120
06	FOCUS limiter ON/OFF	00 01	FOCUS limiter ON FOCUS limiter OFF
07	ZOOM limiter ON/OFF	00 01	ZOOM limiter ON ZOOM limiter OFF
08	ZOOM speed SLOW/FAST	00 01 02 03	Normal ZOOM speed SLOW ZOOM speed FAST ZOOM speed SUPER SLOW
09 ★	COMPLETED FLAG	00 01	Camera adjustment not completed Camera adjustment completed
11 ★	ROM VERSION	05	Camera micro processor ver5
0C ★	LENS INITIAL END	00 01	During the initial operation of the lens Lens initial operation completed
0D ★	PHOTO INTERRUPTER MONITOR	00 01	inf side near side

Addresses with ★ are exclusively for reading.

Table 8-4.

2. Page 1

Address	Adjustment Mode	Data	Function
E6	VH address L		Title horizontal/vertical position (L)
E7	VH address H		Title horizontal/vertical position (H)

Table 8-5.

8-1-8. Adjustment Connector

Most of the measuring points for the camera section adjustment are concentrated on CN701 of the VC-135 board. Connect the oscilloscope etc. via the measuring pin jig (J-6082-139-A). The following table lists the terminal numbers and the signal names of CN701.

Terminal Number	Signal Name	Terminal Number	Signal Name
1	D5V	2	NC
3	ZOOM SW	4	CAM SI
5	CS EEPROM	6	CAM SO
7	$\overline{\text{CS OPD}}$	8	$\overline{\text{CAM SCK}}$
9	$\overline{\text{CS CORE}}$	10	GND
11	IRIS OUT	12	NC
13	V SUB CHK	14	CAM C
15	PG CONT	16	GND
17	NC	18	CAM Y

Table 8-6.

8-1-9. Data Processing

The calculation of the DDS display and the adjusting remote control unit display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 8-7. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

The lower digits of the hexadecimal notation The upper digits of the hexadecimal notation																
	0	1	2	3	4	5	6	7	8	9	A (H)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	80	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (H)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
B (b)	176	177	178	179	180	180	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: () indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (b d).

As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 8-7.

8-2. CAMERA SYSTEM ADJUSTMENT

1. Power Supply Voltage Check (DD-58 board)

Subject	Option
Measuring instrument	Digital voltmeter
D5V check	
Measurement point	Pins ⑨ and ⑩ of CN202
Specified value	$4.85^{+0.15}_{-0.05}$ Vdc
M5V (1) check	
Measurement point	Pins ⑭ and ⑮ of CN202
Specified value	4.98 ± 0.15 Vdc
CAM 5V check	
Measurement point	Pins ①, ③ and ⑥ of CN202
Specified value	4.90 ± 0.15 Vdc
CAM 15V check	
Measurement point	Pin ② of CN202
Specified value	15.0 ± 0.15 Vdc
CAM -9V check	
Measurement point	Pin ④ of CN202
Specified value	-8.40 ± 0.40 Vdc

Checking method:

- 1) Check that each power supply voltage satisfies the specified value.
If not, refer to "Power System Adjustment" in "VIDEO SECTION ADJUSTMENTS".

2. Page F, Page E Data Initialization

Note: It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F, page E has been initialized.

Initializing method:

- 1) Release the protect.
Page: 6, address: 00, data: 01.
- 2) Check that the data of page: 6, address: 09 is 00.
(Display indicating that page F, page E data can be initialized)
- 3) Set data: 1D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Page F, page E data initialization execution.
The data of all addresses of page F, page E will be initialized.)
- 4) Check that the data of page: 6, address: 09 is 01.
(Displays that the initialization of page F, page E data has been completed)
- 5) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote control unit.
(Releases the page F, page E data initialization mode)
- 6) After performing "Page F, page E data modification", perform all the adjustments of the camera section (page F and page E).

3. Page F, Page E Data Modification

The data (initial data) that is automatically written on page F, page E after the initialization of the page F, page E data is different from the initial data for adjustment. Change the data by manual input, and arrange it.

Note: When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote control unit every time the new data is set.

Page F

Address	Data
00 (ID)	51
14 (CORE BURST LEVEL)	38
15 (CORE CHROMA DLY)	04
16 (CORE Y SETUP)	02
17 (CORE VHAPCN)	04
1A (CORE R-Y HUE)	00
1B (CORE B-Y HUE))	00
5C (AWB DELAY TM)	0C
62 (AE REF H)	1B
68 (AE FUNCTION)	42
6A (JITEISU DOWN)	28
6B (JITEISU UP)	0D
8C (ZOOM SPD FAST)	73
8D (ZOOM SPD SUPER)	76
8E (ZS INIT SLOW)	76
8F (ZS INIT FAST)	76
94 (ZOOM SPD SLOW)	29
9E (ZOOM PULSE LIMIT)	EE
AE (NTSC PAL/H DEF DELAY)	19
AF (FF SW)	21
B1 (CORE Y GAIN)	3C
C0 (ZOOM INT SUPER SLOW)	14

Page E

Address	Data
05 (a0 V CORE VALUE)	10
09 (a1 H CORE VALUE)	10

[Distinguishing the Camera Micro Processor (IC702) Versions]

Each version can be distinguished by looking at the part name of the camera micro processor or the data of page: 6, address: 11.

Version	Part Name	Page: 6 Address: 11
Ver.6	CXP80624-443Q	06

4. 28 MHz Original Oscillation Adjustment (VC-135 board)

Subject	Not required
Measurement Point	Pin ⑩ of IC703
Measuring Instrument	Frequency counter
Adjusting Element	CT801
Specified Value	14187500 $\pm$ 71 Hz

Adjusting method:

- 1) Use CT801 to adjust the oscillation frequency to 14187500 $\pm$ 71 Hz.

5. V SUB Adjustment (VC-135 board)

Subject	Not required
Measurement Point	Pin ⑬ of CN701 (V SUB CHK)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	04 (V SUB)
Specified Value	(Imager display voltage) $\pm$ 0.1 Vdc

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01
- 2) Change the data of page: F, address: 04, and adjust the voltage of pin ⑬ of CN701 to (imager display voltage) $\pm$ 0.1 Vdc.
- 3) Press the PAUSE button of the adjusting remote control unit.

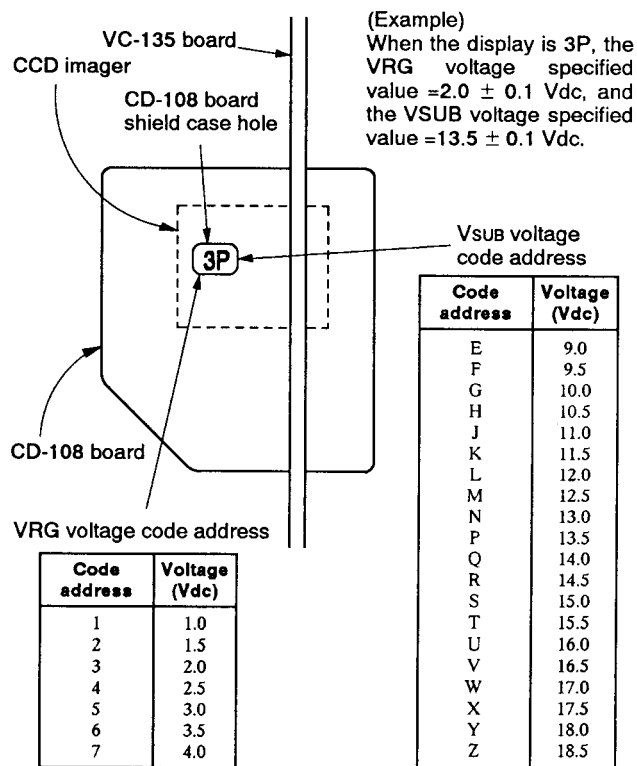


Fig. 8-7.

6. VRG Adjustment (VC-135 board)

Subject	Not required
Measurement Point	Pin ⑮ of CN701 (PG CONT)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	05 (VRG)
Specified Value	(Imager display voltage) ± 0.1 Vdc

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01
- 2) Change the data of page: F, address: 05, and adjust the voltage of pin ⑮ of CN701 to (imager display voltage) ± 0.1 Vdc.
- 3) Press the PAUSE button of the adjusting remote control unit.

7. CCD Imager Correction Data Write

Subject	Not required
Adjustment Page	F
Adjustment	1D to 2C (CCD-DEFECT)

Perform CCD imager correction data write in the following cases.

1. When the CCD imager has been replaced
2. The occasion of exchanging a camera micro processor or EEPROM (IC701).
3. When the page F data has been initialized

In the case of 1, as the correction data is not required for the CCD imager for repair, adjust all data of addresses 1D to 2C to "00".

In the case of 2 and 3, write the correction data attached to the shield case of DD-58 board to addresses 1D to 2C.

If the correction data are not attached, adjust all data of addresses 1D to 2C to "00".

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01
- 2) Write the correction data to page: F, addresses: 1D to 2C.
Note: To perform write to the non-volatile memory, press the PAUSE button of the adjusting remote control unit every time the new data is set.

Processing after completing adjustments

- 1) If the CCD imager has been replaced, remove the old correction data label attached on DD-58 board.

8. VAP Pre-check

Subject	Color bar chart
Measuring Point	Adjusting remote control unit display Page: B, address: 0B PH
Measuring Instrument	Page: B, address: 0D YH
Specified Value	PHF ≤ 68 YHF ≤ 68 PHO ≥ 98 YHO ≥ 98

Checking method:

- 1) Adjust the position of the unit so that the color bar chart comes to the center of the monitor (top, bottom, left, and right).
- 2) Release the protect.
Page: 6, address: 00, data: 01
- 3) Set data: 01 to page: B, address: 05.
(a1 SENS VAP MODE 4 setting)
- 4) Set data: FF to page: E, address: 10.
Set data: 0F to page: E, address: 11.
(Check that the color bar chart shifts downwards on the monitor TV.)
- 5) After 1 second, check that the data (PHF) of page: B, address: 0B is within the "00" to "68" range.
- 6) Set data: 00 to page: E, address: 10. -
Set data: 08 to page: E, address: 11.
(Check that the color bar chart shifted downwards moves back to the center of the monitor TV.)
Set data: FF to page: E, address: 12.
Set data: 0F to page: E, address: 13.
(Check that the color bar chart shifts to the right.)
- 7) After 1 second, check that the data (YHF) of page: B, address: 0D is within the "00" to "68" range.
- 8) Set data: 00 to page: E, address: 12.
Set data: 00 to page: E, address: 13.
(Check that the color bar chart shifts to the left via the center.)
- 9) After 1 second, check that the data (YHO) of page: B, address: 0D is within the "98" to "FF" range.
- 10) Set data: 08 to page: E, address: 13.
(Check that the color bar chart moves back to the center.)
Set data: 00 to page: E, address: 11.
Set data: 00 to page: E, address: 10.
(Check that the color bar chart shifts upwards.)
- 11) After 1 second, check that the data (PHO) of page: B, address: 0B is within the "98" to "FF" range.
- 12) Set data: 08 to page: E, address: 11.
(Check that the color bar chart moves back to the center.)
- 13) Set data: 00 to page: B, address: 05.
(Release of a1 SENS VAP MODE 4)

9. HALL Adjustment

Subject	Not required
Measurement Point	DDS display of EVF or monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	08 (HALL GAIN) 09 (HALL OFFSET)
Specified Value	31 to 35 during IRIS OPEN B1 to B5 during IRIS CLOSE

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01
- 2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
(HALL output display mode setting)
- 3) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS CLOSE mode setting)
- 4) Set data: 40 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
- 5) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and take it as W2.
- 6) Set data: 30 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
- 7) Read the DDS display data, and take it as W1.
- 8) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS OPEN mode setting)
- 9) Read the DDS display data, and take it as K1.
- 10) Set data: 40 to page: F, address: 08, and press the PAUSE button.
- 11) Read the DDS display data, and take it as K2.
- 12) Convert W1, W2, K1, K2 to decimal notation, and obtain W1', W2', K1', K2'. (Refer to Table 8-7. "Hexadecimal notation-decimal notation conversion table".)
- 13) Calculate X1' using the following equations (decimal notation calculation).

$$A' = W2' + K1' - W1' - K2' \dots \dots \dots \text{Equation 1}$$

$$B' = W1' - K1' \dots \dots \dots \text{Equation 2}$$

$$X1' = \frac{2048 + (48 \times A') - (16 \times B')}{A'} \dots \dots \dots \text{Equation 3}$$
- 14) Convert X1' to hexadecimal notation, and obtain X1.
(Round off to one decimal place)
- 15) Set data: X1 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
- 16) Change the data of page: F, address: 09, and adjust the DDS display data to "33".
- 17) Press the PAUSE button of the adjusting remote control unit.
- 18) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS CLOSE mode setting)

- 19) Read the DDS display data, and take it as W0. If W0 lies within the "B1" to "B5" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.

- 20) Convert W0 to decimal notation, and obtain W0'.

- 21) Calculate X2' using the following equations (decimal notation calculation).

$$C' = W0' - B' - 51 \dots \dots \dots \text{Equation 4}$$

$$X2' = \frac{(128 - B') \times (X1' - 48) + 48 \times C'}{C'} \dots \dots \dots \text{Equation 5}$$

(X1' and B' are values obtained from equations 2 and 3)

- 22) Convert X2' to hexadecimal notation and obtain X2.

(Round off to one decimal place)

- 23) Set data X2 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.

- 24) Change the data of page: F, address: 09, and adjust the DDS display data to "B3".

- 25) Press the PAUSE button of the adjusting remote control unit.

- 26) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS OPEN mode setting)

- 27) Check that the DDS display data lies within the "31" to "35" range.

Processing after Completing Adjustments

- 1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS NORMAL mode setting)

10. Flange Back Adjustment

Subject	Chart for flange back adjustment (1000 ± 5 mm from the front side of the lens Luminance: 350 ± 50 lux)
Measurement Point	Check the operations on the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	86 (WIDE LIMIT), 87 (WIDE LIMIT H), 88 (TELE LIMIT), 89 (TELE LIMIT H), 8A (STEP ZERO), 8B (STEP ZERO SPAN)

Adjusting method:

- 1) Check that the STEADY SHOT switch is at "Off".
- 2) Check that the data of address: 86 to address: 8A of page: F are set to the initial values.
- 3) Check that the flange back adjustment chart center and the exposure display center coincide at both zoom lens TELE end and WIDE end.
- 4) Release the protect.
Page: 6, address: 00, data: 01
- 5) Check that the data of page: 6, address: 09 is 00.
(Flange back adjustment possible display)
- 6) Set data: 01 to page: F, address: AC.
(This causes automatic adjustment to be performed. Adjustments are performed at the zoom lens TELE end first, and then at the WIDE end. The adjustment data is automatically input to page: F, addresses: 86 to 8B.)
- 7) Check that the data of page: 6, address: 09 is 01.
(Display indicating flange back adjustment completion)

Processing after completing adjustments

- 1) Set data: 00 to page: F, address: AC.
- 2) Turn off the main power supply (6.3V).

11. Flange Back Check

Subject	Siemens star (1m from the front of the lens)
Measurement Point	DDS display of EVF or monitor TV
Measuring Instrument	
Specified Value	$D_2 = D_1 \pm 3$

Checking method:

- 1) Set data: 11 to page: 6, address: 00.
(Camera adjustment (window ON) mode)
- 2) Set data: B0 to page: F, address: AF.
(Focus step display mode)
- 3) Place the Siemens star 1m from the front of the lens.
- 4) Set the "Auto-lock" switch to "Off".
- 5) Set the "Exposure" to "Manual". Rotate the "Exposure" dial to the "+" side, and set the IRIS to "Open".
- 6) Adjust the luminance intensity or shutter speed for the Siemens star so that the optimum image can be obtained.
- 7) Expose the siemens star at the zoom TELE end.
- 8) Set the "Focus" to "Manual". Rotate the focus ring, and adjust the focus.
- 9) Adjust to the zoom WIDE end.
- 10) Read the focus step value (4 digits) displayed on the TV monitor, and take it as D1.
- 11) Rotate the focus ring, and adjust the focus.
Read the focus step value, and take it as D2.
- 12) Check that $D_2 = D_1 \pm 3$.

Processing after Completing Check

- 1) Set data: 21 to page: F, address: AF.
Press the PAUSE button of the adjusting remote control unit.

12. SYNC Level Adjustment (VC-135 board)

Subject	Not required
Measurement Point	Pin ⑮ of CN701 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	06 (VREF-Y)
Specified Value	$A=150 \pm 5 \text{ mV}$

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01
- 2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS CLOSE mode setting)
- 3) Change the data of page: F, address: 06, and adjust so that the SYNC level (A) becomes the specified value.
- 4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

- 1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Release of IRIS CLOSE mode)

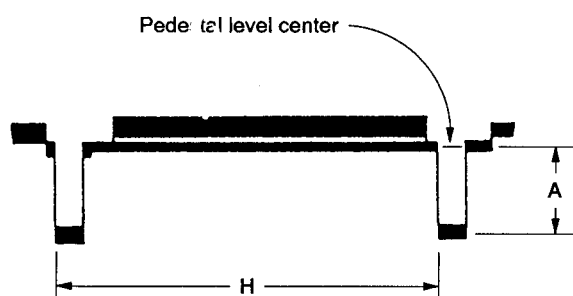


Fig. 8-8.

13. BURST Level Adjustment (VC-135 board)

Subject	Not required
Measurement Point	Pin ⑭ of CN701 (CAM C)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	07 (VREF-C)
Specified Value	$A=150 \pm 5 \text{ mVp-p}$

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01
- 2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS CLOSE mode setting)
- 3) Change the data of page: F, address: 07, and adjust so that the burst level (A) becomes the specified value.
- 4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

- 1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Release of IRIS CLOSE mode)

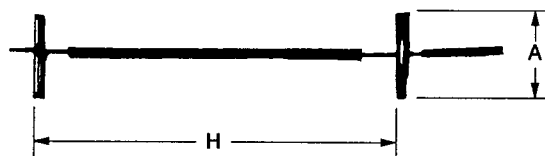


Fig. 8-9.

14. A/D Offset Adjustment

Subject	Not required
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope and DDS display on the EVF or the TV monitor
Adjustment Page	F
Adjustment Address	0C (AD REF)
Specified Value	42 to 43

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01
- 2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS CLOSE AGC MIN mode setting)
- 3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
(Y sampling output mode setting)
- 4) Set data: 35 to page: 1, address: E6.
(Setting 1 of the sampling position)
- 5) Set data: 6D to page: 1, address: E7.
(Setting 2 of the sampling position)
- 6) Gradually increase the data of page: F, address: 0C from "00" until the black luminance point of the vectorscope begins to enlarge. At this time, check that the DDS display data is "42" and sometimes "43".

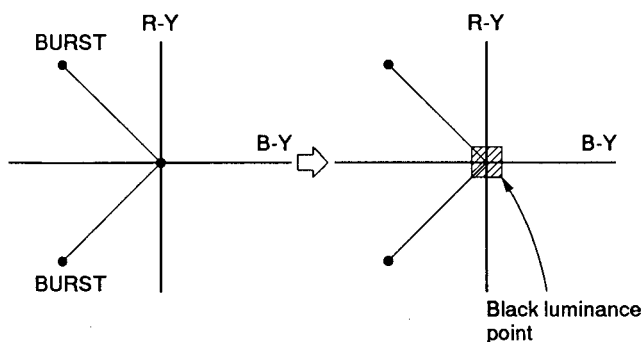


Fig. 8-10.

- 7) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

- 1) Set data: 21 to page: F, address: AF and press the PAUSE button of the adjusting remote control unit.
(Release of Y sampling output mode)
- 2) Set data: 00 to page: 1, address: E6.
Set data: 00 to page: 1, address: E7.
(Release of sampling position setting)
- 3) Set data: 00 to page: 6, address: 01.
Press the PAUSE button of the adjusting remote control unit. (Release of IRIS CLOSE mode)

15. Carrier Balance Adjustment

Subject	Not required
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	03 (CS SL)
Specified Value	The center of the black luminance point should lie within the 1 ϕ circle whose center is the principle point.

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01.
- 2) Set data: 07 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS CLOSE, AGC MAX mode setting)
- 3) Change the data of page: F, address: 03, and adjust so that the center of the black luminance point coincides with the principle point.
- 4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

- 1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS NORMAL mode setting)

The center of the black luminance point should be within this circle.

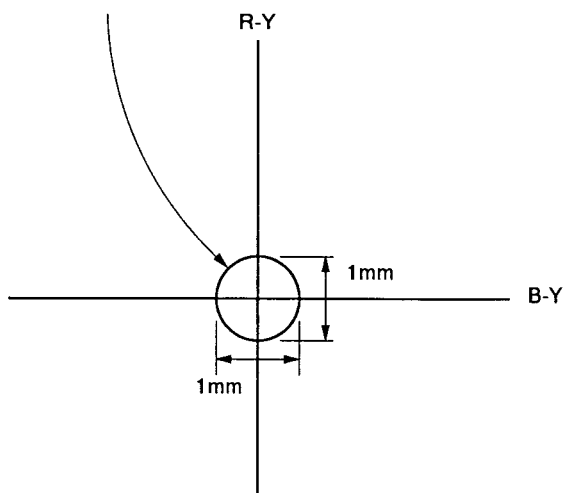


Fig. 8-11.

16. Picture Frame Setting

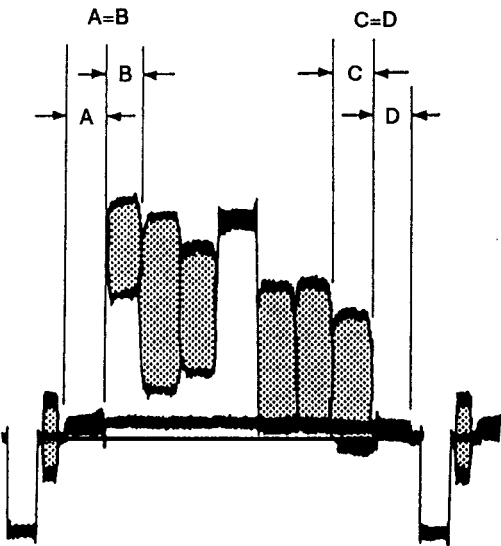
Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor.
Specified Value	A=B, C=D, t=0 ± 0.1 msec •

Setting method:

- 1) Turn the auto focus off.
- 2) Adjust the focus using the focus knob.
- 3) Adjust the zoom and the camera direction, and set to the specified position.
- 4) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using “color bar chart standard picture frame” and “white pattern standard picture frame”.

Check on the oscilloscope

1. H period



2. V period

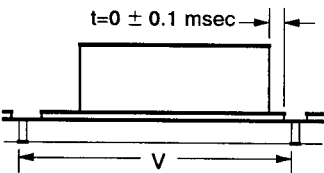


Fig. 8-12.

Check on the TV monitor (under-scan mode)

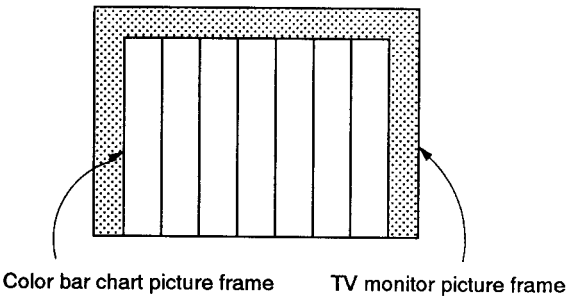


Fig. 8-13.

17. IRIS Level Adjustment (VC-135 board)

Subject	Color bar standard picture frame
Measurement Point	Pin ⑪ of CN701 (IRIS OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	63 (AGC MIN)
Specified Value	$A=200 \pm 5 \text{ mV}$

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01
- 2) Change the data of page: F, address: 63, and adjust so that the IRIS OUT signal level (A) becomes the specified value.
- 3) Press the PAUSE button of the adjusting remote control unit.

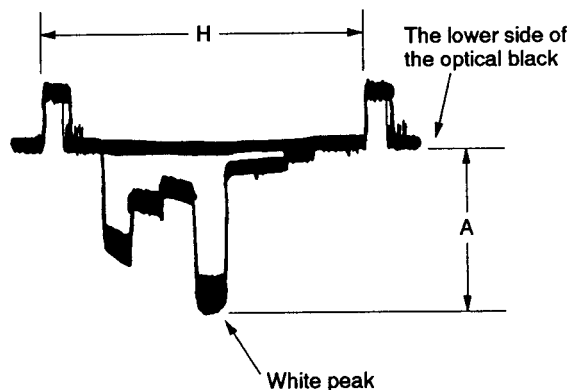


Fig. 8-14.

18. MAX GAIN Adjustment (VC-135 board)

Subject	Color bar standard picture frame
Filter	ND filter 1.0 (2 sheets) and 0.4 (1 sheet), 0.1 (1 sheet)
Measurement Point	Pin ⑪ of CN701 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	64 (AE MIN L)
Specified Value	$A=165 \pm 5 \text{ mV}$

Adjusting method:

- 1) Place the ND filter 2.5 (1.0+1.0+0.4+0.1) on the lens.
- 2) Release the protect.
Page: 6, address: 00, data: 01
- 2) Change the data of page: F, address: 64, and adjust so that the CAM Y signal level (A) becomes the specified value.
Note: If the CAM Y signal level does not satisfy the specified value even if the data of Address: 64 is set to "00", set the data to "00".
- 4) Press the PAUSE button of the adjusting remote control unit.

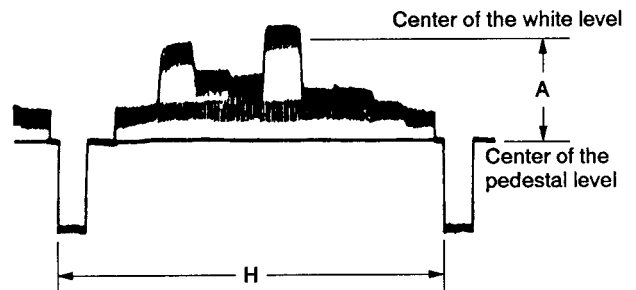


Fig. 8-15.

19. IRIS IN/OUT Adjustment

Subject	White pattern standard picture frame
Measurement Point	DDS display of the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	39 (AWB IRIS IN) 3A (AWB IRIS OUT)

Adjusting method:

- 1) Set data: 11 to page: 6, address: 00.
(Camera adjustment mode (window ON) setting)
- 2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
(HALL data display)
- 3) Set data: 0B to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(ND0.8 shutter mode setting)
- 4) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor), and take it as D39.
- 5) Set data: D39 to page: F, address: 39, and press the PAUSE button of the adjusting remote control unit.
- 6) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(ND0.5 shutter mode setting)
- 7) Read the DDS display data and take it as D3A.
- 8) Set data: D3A to page: F, address: 3A, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

- 1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Release of the ND0.5 shutter mode)

20. Pre-white Balance Adjustment

Subject	White pattern standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	33 (R CONT REF), 34 (B CONT REF)
Specified Value	The center of the white luminance point should lie within the circle with a diameter of 1 mm whose center is the principle point

Adjusting method:

- 1) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(WB 3200K preset mode setting)
- 2) Set data: 11 to page: 6, address: 00.
(Camera adjustment mode (window ON) setting)
- 3) Change the data of addresses:33 and 34 of page: F alternately, and coincide the white luminance point to the principle point.
Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
If not, the new data will not written to the memory.
- 4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

- 1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Release of the preset mode)
- 2) Set data: 10 to page: 6, address: 00.
(Protect mode setting)

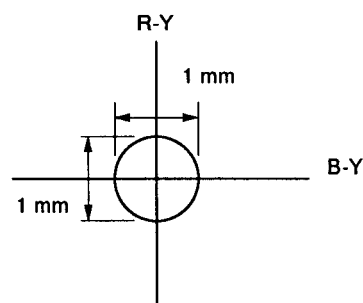


Fig. 8-16.

21. Color Reproduction Adjustment

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	18 (CORE B-Y GAIN), 19 (CORE R-Y GAIN), 1A (CORE R-Y HUE), 1B (CORE B-Y HUE)
Specified Value	All color luminance points should settle within each color reproduction frame.

Adjusting method:

- 1) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Indoor white balance mode setting)
- 2) Set data: 01 to page: 6, address: 00.
(Camera adjustment mode (window OFF) setting).
- 3) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
- 4) Change the data of addresses 18 to 1B of page: F, and settle each color luminance point in each color reproduction frame.

Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
If not, the new data will not be written to the memory.

- 5) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

- 1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Release of the adjustment mode)
- 2) Set data: 10 to page: 6, address: 00.
(Protect mode setting)

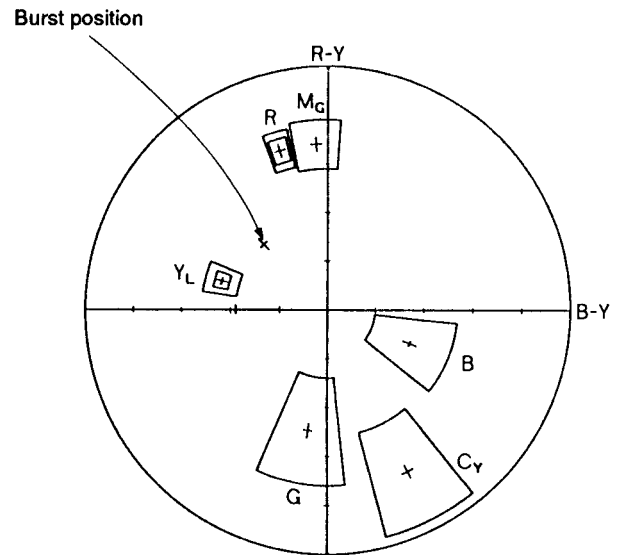


Fig. 8-17.

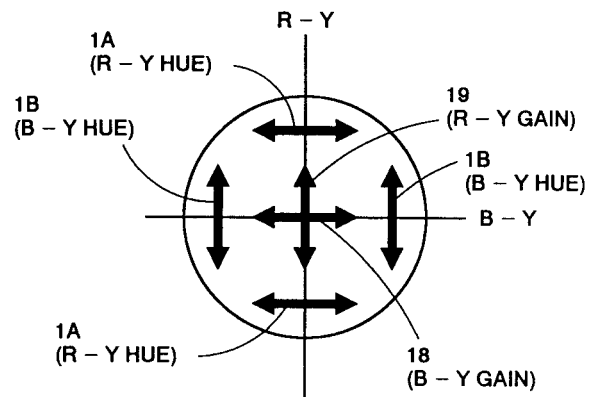


Fig. 8-18. Direction of the Movements of the Adjustment Address and Luminance Point

22. Auto White Balance Preset Adjustment

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	2D (R REF L), 2E (R REF H), 2F (G REF L), 3O (G REF H), 31 (B REF L), 32 (B REF H)

Adjusting method:

- 1) Turn the power of the unit OFF/ON.
- 2) Check that the data of page: 6, address: 09 is 00.
(Auto white balance preset adjustment possible display)
- 3) Set data: 11 to page: 6, address: 00.
(Camera adjustment mode (window ON) setting)
- 5) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(3200K preset data take in preparation mode)
- 6) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(When the 3200K preset data is taken in, the data will be automatically input to addresses 2D to 32 of page F.)
- 7) Check that the data of page: 6, address: 09 is 01.
(Auto white balance preset adjustment completion display)
- 8) Perform "Auto White Balance Adjustment".

Processing after completing adjustments

- 1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Release of the auto white balance preset mode)
- 2) Set data: 10 to page: 6, address: 00.
(Release of camera adjustment mode)

23. Auto White Balance Adjustment

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	Check with the DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	35 (AWB NORM R) 36 (AWB NORM B)
Specified Value	R ratio 2980 ± 40 B ratio $5C80 \pm 40$

Note: Perform this adjustment after "Auto White Balance Preset Adjustment".

Adjusting method:

- 1) Set data: 11 to page: 6, address: 00.
(Camera adjustment mode (window ON) setting)
- 2) Set data: D0 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
(Auto white balance adjustment mode setting)
- 3) Set data: 82 to page: F, address: AF.
(R ratio display mode setting)
- 4) Change the data of page: F, address: 35, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to 2980 ± 40 .
- 5) Press the PAUSE button of the adjusting remote control unit.
- 6) Set data: 83 to page: F, address: AF.
(B ratio display mode setting)
- 7) Change the data of page: F, address: 36, and adjust the average value of the DDS display data to $5C80 \pm 40$.
- 8) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

- 1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
(Release of the white balance adjustment mode)
- 2) Set data: 21 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
(Release of the B ratio display mode)
- 3) Set data: 10 to page: 6, address: 00.
(Release of camera adjustment mode)

24. White Balance Check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 8-19. A to C

Checking method:

- 1) Check that the lens is not covered with either filter.
- 2) Set data: 11 to page: 6, address: 00.
(Camera adjustment mode (window ON) setting)
- 3) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Indoor white balance mode setting)
- 4) Check that the center of the white luminance point is within the circle shown in Fig. 8-19.A.
(Indoor white balance check)
- 5) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Auto white balance mode setting)
- 6) Set data: 01 to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
(Auto white balance high speed tracking mode setting)
- 7) Set data: 91 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
(R, B ratio (M) display mode setting)
- 8) Check that the top 2 digits and the bottom 2 digits of the DDS display are 3D to 43, or check that the center of the white luminance point is within the circle shown in Fig. 8-19. A.
- 9) Place the C14 filter on the lens.
- 10) Check that the center of the white luminance point settles in the circle shown in Fig. 8-19. B.
(Auto white balance outdoor mode check)
- 11) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
- 12) Check that the center of the white luminance point settles in the circle shown in Fig. 8-19. C.
(Auto white balance indoor mode check)

Processing after completing adjustments

- 1) Set data: 0C to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
(Release of the auto white balance fast tracking mode)
- 2) Set data: 21 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
(Release of the R, B ratio (M) display mode setting)
- 3) Set data: 10 to page: 6, address: 00.
(Release of camera adjustment mode)

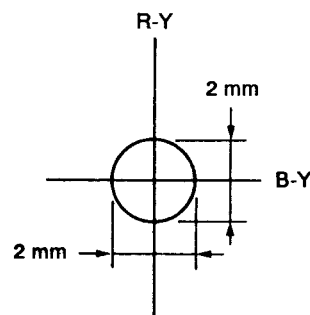


Fig. 8-19. A

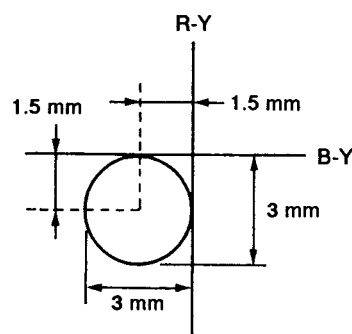


Fig. 8-19. B

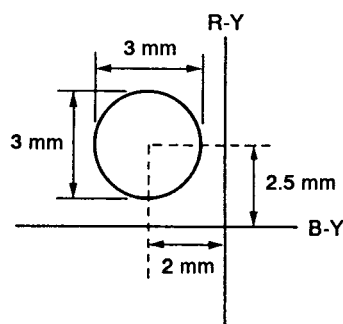


Fig. 8-19. C

25. Linear Matrix Adjustment

Subject	Color bar standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3D (DMAT HUE) 3E (DMAT GAIN)

Note 1: Check that position of the color bar chart picture frame that was set in "16. Picture Frame Setting" is maintained, before beginning adjustments.

Adjusting method:

- 1) Remove the filter C14 for color temperature correction.
- 2) Release the protect.
Page: 6, address: 00, data: 01
- 3) Color bar data sampling mode setting
 1. Check that the data of page: 6, address: 01 is 00.
 2. Set data: F1 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
 3. Set data: 3A to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
(Check that the colors on the monitor display at the color modulation stop mode setting have disappeared)
- 4) Specifying the Yellow position
 1. Set data: C9 to page: 1, address: E6.
 2. Set data: B6 to page: 1, address: E7.
- 5) Set data: 02 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
(R-Y data display mode setting)
- 6) Read the average value of the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or TV monitor, Note 2), and take it as Y1.
- 7) Specifying the Red position
 1. Set data: 59 to page: 1, address: E6.
 2. Set data: 6D to page: 1, address: E7.
- 8) Read the average value of the DDS display data (Note 2), and take it as R1.
Note 2: DDS is displayed only when the adjusting remote control unit is displaying page F or page E.
- 9) Place the filter C14 for color temperature correction on the lens. (Ensure that the picture frame of the chart does not shift at this time.)
- 10) Specifying the yellow position.
 1. Set data: C9 to page: 1, address: E6.
 2. Set data: B6 to page: 1, address: E7.
- 11) Read the average value of the DDS display data (Note 2), and take it as Y2.
- 12) Convert Y1, R1, Y2 to decimal notation to obtain Y1', R1' and Y2'.
(Refer to Table 8-7. "Hexadecimal notation-decimal notation conversion table")

- 13) Calculate X1' from the following equation (decimal notation calculation).
 $X1' = Y2' - Y1'$

- 14) Calculate D3D from the following table.
(D3D is hexadecimal notation)

X1' value	D3D
$-1 \leq X1' \leq 1$	F0
$X1' > 1$	F1
$X1' < -1$	FF

- 15) Set data: D3D to page: F, address: 3D, and press the PAUSE button of the adjusting remote control unit.
- 16) Specifying the Red position
 1. Set data: 59 to page: 1, address: E6.
 2. Set data: 6D to page: 1, address: E7.
- 17) Read the average value of the DDS display data (Note 2), and take it as R2.
- 18) Convert R2 to decimal notation to obtain R2'.
- 19) Calculate X2' from the following equation (decimal notation calculation).
 $X2' = R2' - R1'$
- 20) Calculate D3E from the following table.

X2' value	D3E
$X2' \geq 0$	00
$0 > X2' \geq -1$	01
$-1 > X2'$	02

- 21) Set data: D3E to page: F, address: 3E, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

- 1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
(Release of the sampling mode)
- 2) Set data: 38 to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
(Color modulation ON mode setting)
- 3) Set data: 21 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
(Release of the R-Y data display mode)
- 4) Turn the main power supply (6.3V) off.

Note 3: As the R-Y data and B-Y data are displayed alternatively, it will be difficult to read the R-Y data. Record this data on a tape, and perform frame advancing playback so that only the R-Y data is read. (Example)

If the frame advancing playback is performed, the following will be displayed.

$\underline{81} \rightarrow 7A \rightarrow \underline{82} \rightarrow 7A \rightarrow \underline{80} \rightarrow 7A \rightarrow \underline{81} \rightarrow 7C \rightarrow \underline{81} \rightarrow 79$
As the R-Y data is above 80, and the B-Y data is below 7F, the data which is underlined is the R-Y data. If the average value is calculated, the R-Y data will become 81.

26. VIDEO OUT Level Check

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal (Terminated at $75\ \Omega$)
Measuring Instrument	Oscilloscope
Specified Value	Y level= $640 \pm 50\text{ mV}$ SYNC level= $300 \pm 20\text{ mV}$ BURST level= $300 \pm 30\text{ mVp-p}$

Checking method:

- 1) Check that the Y level, SYNC level and BURST level satisfy the specified values.

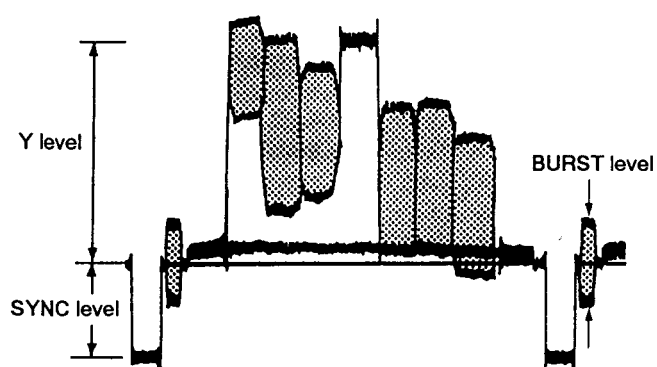


Fig. 8-20.

27. Title Color Reproduction Adjustment

Subject	All black (Cover the lens with a black cap)
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	D
Adjustment Address	14 (BLU R-Y), 15 (BLU B-Y), 16 (GRN R-Y), 17 (GRN B-Y), 18 (CYN R-Y), 19 (CYN B-Y), 1A (RED R-Y), 1B (RED B-Y), 1C (VIO R-Y), 1D (VIO B-Y), 1E (YEL R-Y), 1F (YEL B-Y)
Specified Value	Each title color luminance point should settle within each color reproduction frame.

Note: For details on the page D address list, refer to “Service Mode” in “VIDEO SECTION ADJUSTMENTS”.

Adjusting method:

- 1) Release the protect of page D.
Page: 1, address: 00, data: 01
- 2) Press the superimpose button “memory”.
- 3) Adjust the HOLD switch of the adjusting remote control unit to “NORMAL” (left).
- 4) Use the “color/mode” button to change the title color to “blue”.
- 5) Adjust the HOLD switch of the adjusting remote control unit to “SERVICE” (right).
- 6) Change the data of addresses 14 and 15 of page D, and settle the blue luminance points within the blue (B) color reproduction frame.

Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the address.

If not, the new data will not be written in the memory.

- 7) Press the PAUSE button of the adjusting remote control unit.
- 8) Adjust for green (addresses 16, 17), cyan (addresses 18, 19), red (addresses 1A, 1B), violet (addresses 1C, 1D) and yellow (addresses 1E, 1F) in the same way.
- 9) Remove the adjusting remote control unit, change the titler color, and check that each title color luminance point is within the color reproduction frame.

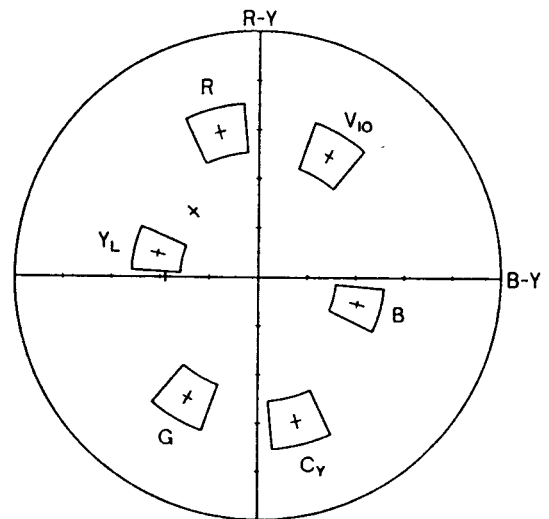


Fig. 8-21.

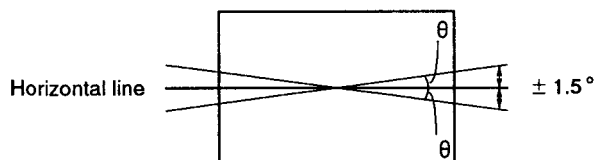
8-3. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

8-3-1. Horizontal Slant Adjustment

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8CSE) Monoscope section
Specified Value	Refer to Fig. 8-22.

Adjusting method:

- 1) Adjust RV504 (BRIGHT) so that the CRT can be seen easily and clearly.
- 2) Loosen the DY (deflection yoke) tightening nut.
- 3) Rotate DY, and adjust the image so that it is horizontal.
- 4) Tighten the DY tightening nut.
(Do not tighten it too tightly.)



Specified value: The image should be within $\pm 1.5^\circ$ of the horizontal line.

Fig. 8-22.

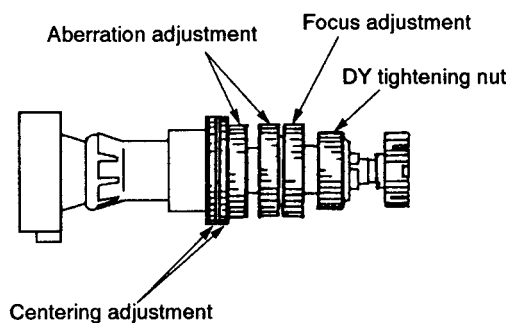


Fig. 8-23.

8-3-2. Centering Adjustment

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8CSE) Monoscope section
Specified Value	Refer to Fig. 8-24.

Adjusting method:

- 1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform.
(Refer to Fig. 8-23.)

Note: As the centering position changes due to earth magnetism, rotate it 360° in the horizontal direction, and adjust with the center section of the modifying position.

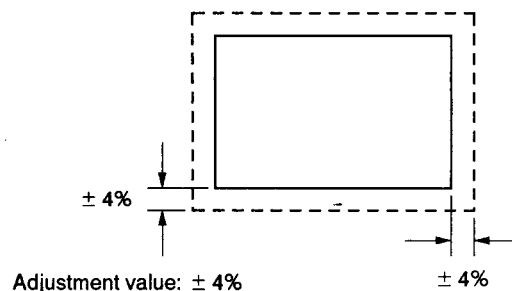


Fig. 8-24.

8-3-3. Focus Adjustment

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8CSE) Monoscope section

Adjusting method:

- 1) Adjust the focus ring to obtain the optimum focus.
(Refer to Fig. 8-23.)

8-3-4. Aberration Adjustment

Model	E-E
Signal	Dot pattern
Specified Value	Refer to Fig. 8-25.

Adjusting method:

- 1) Adjust the aberration adjustment ring so that the tracing of the dot becomes less than twice the diameter of the dot, or the fan aberration becomes less than the diameter of the dot.
- 2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

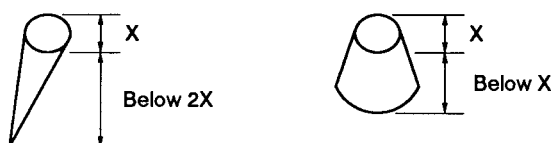


Fig. 8-25.

8-3-5. Horizontal Oscillation Frequency Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8CSE)
Measurement Point	Positive pole terminal of C516
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment Element	RV501
Specified Value	2.30 ± 0.05 Vdc

Adjusting method:

- 1) Adjust to 2.30 ± 0.05 Vdc using RV501.

8-3-6. Horizontal Amplitude Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8CSE) Monoscope section
Adjusting Element	C504
Specified Value	$6 \pm 2\%$

Adjusting method:

- 1) Rotate RV502, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
- 2) Rotate RV504 so that the brightness is the normal level.
- 3) Adjust the pattern (A) of the H size adjustment capacitor (C504) to "short" or "open", so that the horizontal direction over scan becomes $6 \pm 2\%$ (Left and right totals). (Refer to Fig. 8-27.)

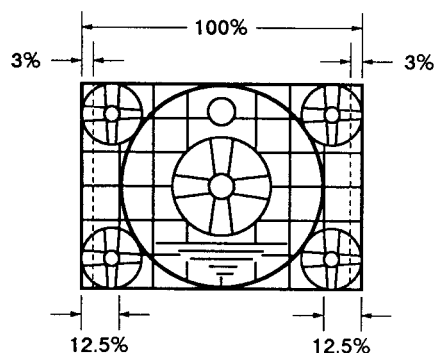
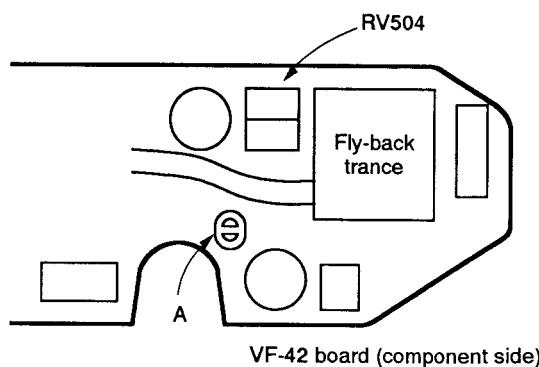


Fig. 8-26.



Section A	Size H
Open	Small
Short	Big

Fig. 8-27.

8-3-7. Vertical Amplitude Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8CSE) Monoscope section
Adjusting Element	RV502
Specified Value	5 ± 2%

Adjusting method:
1) Adjust RV502 so that the vertical direction over scan becomes 5 ± 2% (Top and bottom totals).

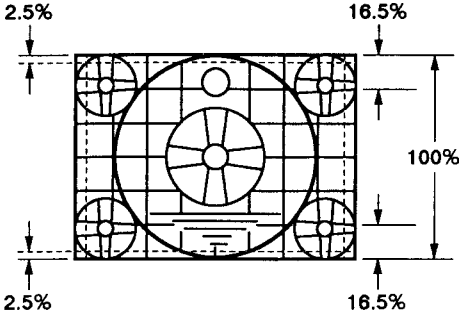


Fig. 8-28.

8-3-8. Brightness, Contrast Adjustments (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8CSE) Monoscope section
Adjusting Element	Brightness: RV504 Contrast: RV503

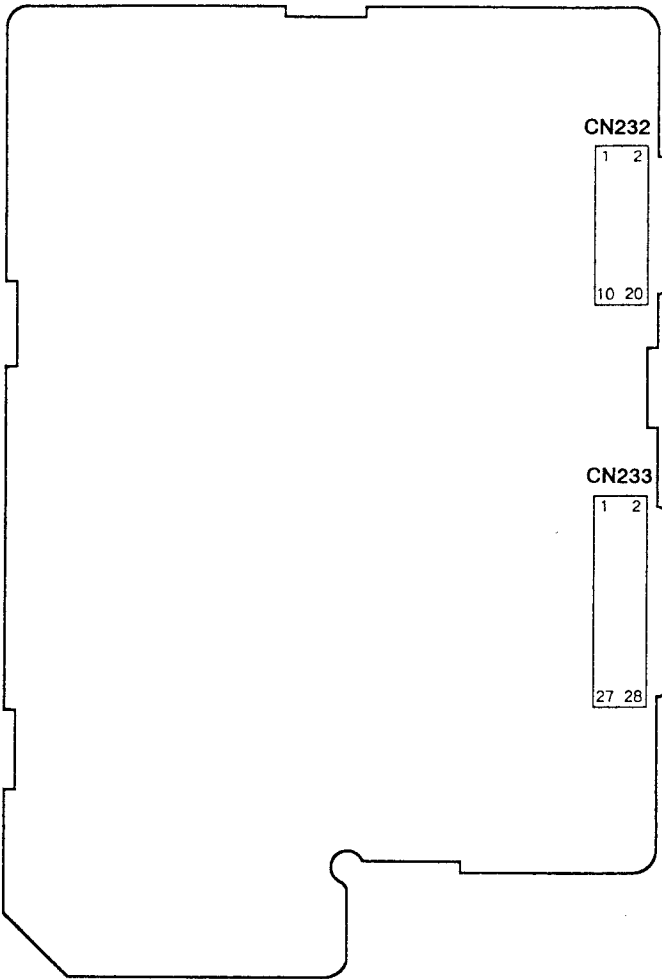
Adjusting method:
1) Rotate RV504 and RV503 alternately, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should not be so bright that the cross hatch in the monoscope circle appears vague. The dark section should not be so dark that the darkest section and the second darkest section of the gray scale cannot be differentiated.)

8-3-9. Horizontal Amplitude, Vertical Amplitude, Focus Check

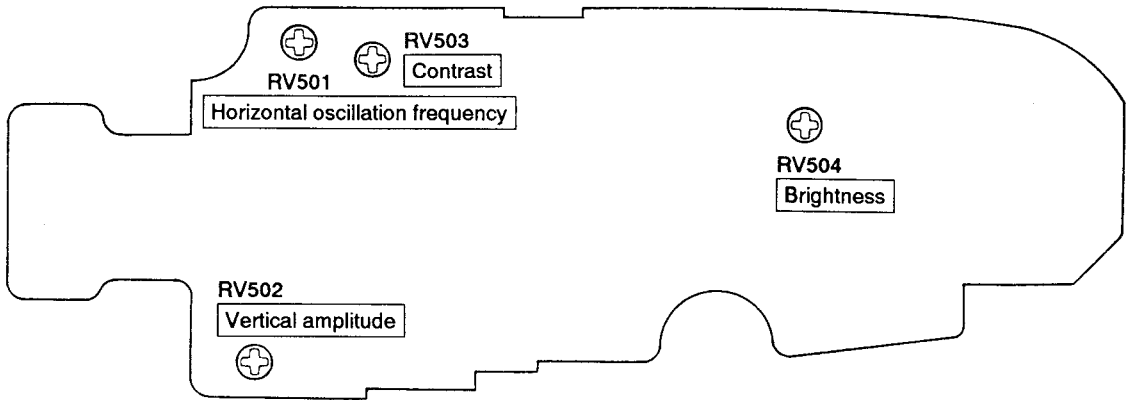
“8-3-6. Horizontal Amplitude Adjustment” and “8-3-7. Vertical Amplitude Adjustment” should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform “8-3-8. Brightness, Contrast Adjustments” again. Moreover, check the focus, and if it found to be vague, perform “8-3-3. Focus Adjustment” and “8-3-4. Aberration Adjustment”.

8-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

DD-58 BOARD (COMPONENT SIDE)

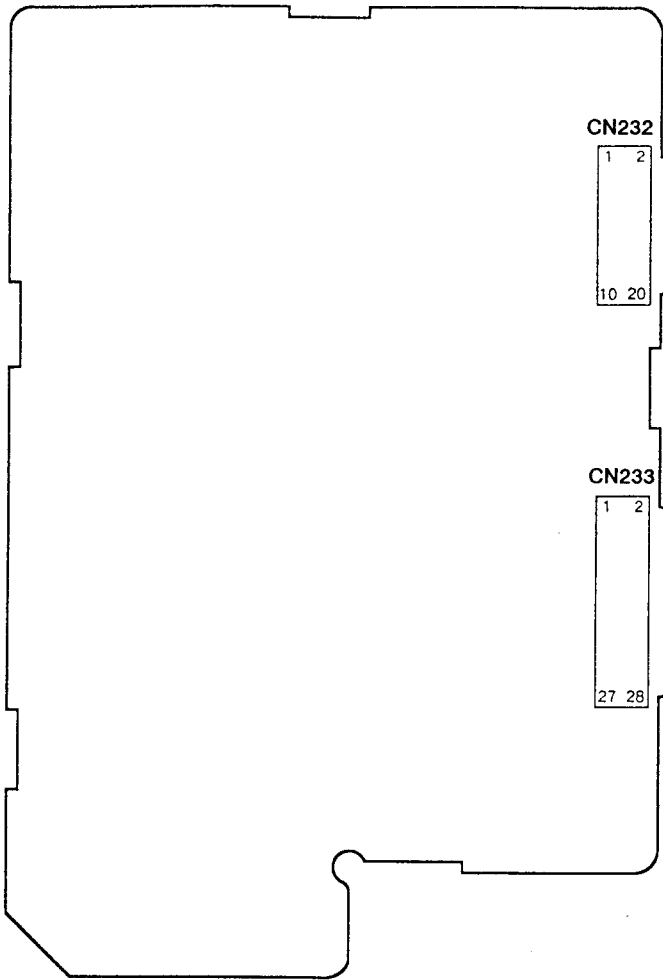


VF-42 BOARD (COMPONENT SIDE)

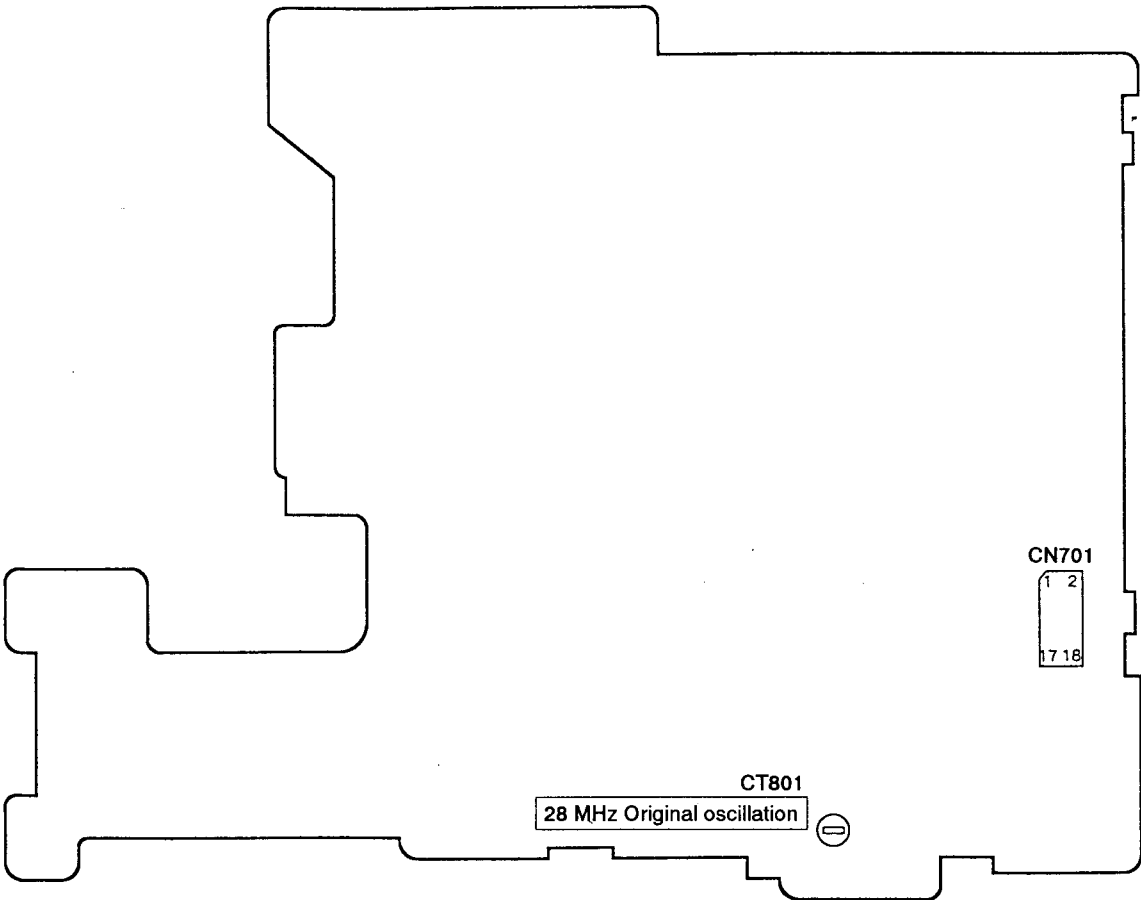


8-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

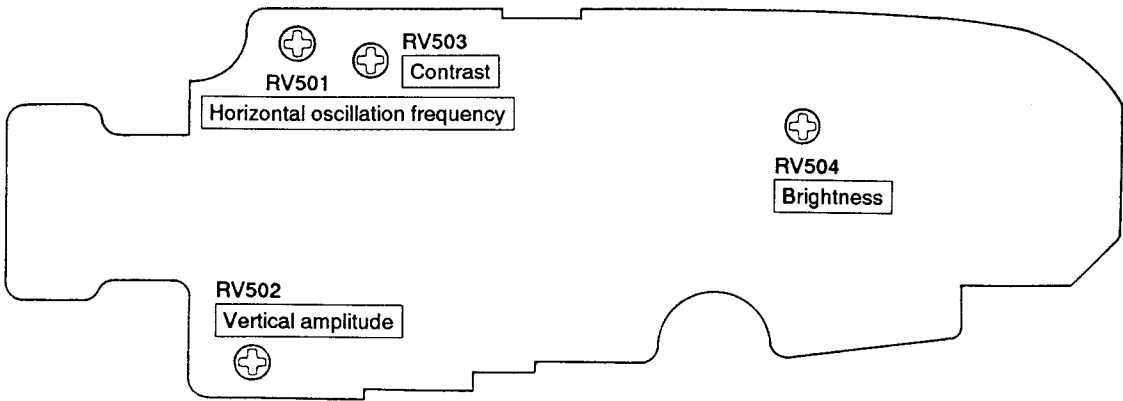
DD-58 BOARD (COMPONENT SIDE)



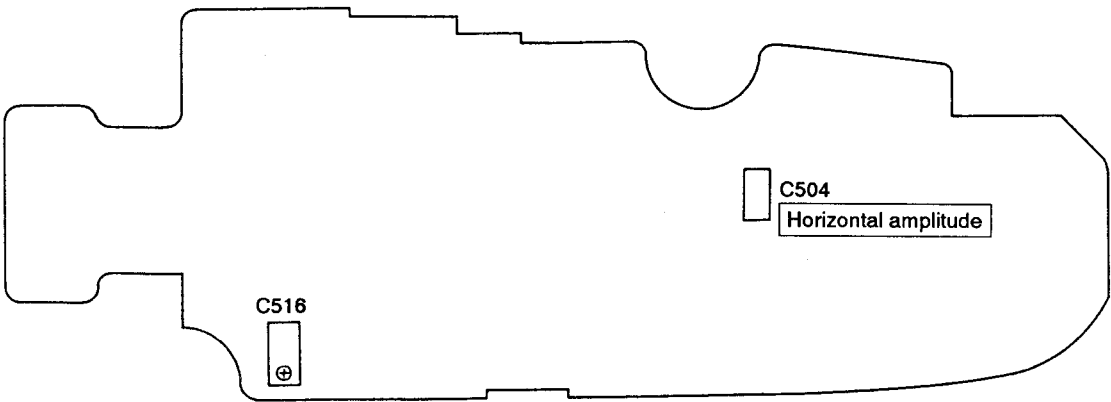
VC-135 BOARD (COMPONENT SIDE)



VF-42 BOARD (COMPONENT SIDE)



VF-42 BOARD (CONDUCTOR SIDE)



Address	Name	Function () indicates the adjusting voltage output terminal.	Adjusting Data	
			Initial Value	Memo Column
58	PB Y (E)	Hi8 PB Y level adjustment (IC304 ⑨)	A0	
59	PB Y (L)	Normal PB Y level adjustment (IC304 ⑨)	A0	
5A	EMPH (EE)	EE emphasis input level adjustment (IC304 ⑩)	92	
5B	EMPH (PB)	PB LINE OUT level adjustment (IC304 ⑩)	9A	
5C	REC L CONT (ME E SP)	Hi8 ME SP REC L CONT adjustment (IC305 ②)	DA	
5D	REC L CONT (MP E SP)	Hi8 MP SP REC L CONT adjustment (IC305 ②)	A5	
5E	REC L CONT (ME L SP)	Normal ME SP REC L CONT adjustment (IC305 ②)	D0	
5F	REC L CONT (MP L SP)	Normal MP SP REC L CONT adjustment (IC305 ②)	B9	
60	REC L CONT (ME E LP)	Hi8 ME LP REC L CONT (IC305 ②)	DA	
61	REC L CONT (MP E LP)	Hi8 MP LP REC L CONT (IC305 ②)	A5	
62	REC L CONT (ME L LP)	Normal ME LP REC L CONT (IC305 ②)	D0	
63	REC L CONT (MP L LP)	Normal MP LP REC L CONT (IC305 ②)	B9	
64	PILOT CONT (ME)	ME PILOT CONT (IC305 ④)	90	90
65	PILOT CONT (MP)	MP PILOT CONT (IC305 ④)	80	80
66	YD ADJ	YD adjustment (IC304 ②)	84	
67	PAL JOG	PAL JOG adjustment (IC304 ③)	6D	6D
68	D. CLIP (ME E SP)	Hi8 ME SP DARK CLIP (IC304 ⑦)	1D	1D
69	D. CLIP (MP E SP)	Hi8 MP SP DARK CLIP (IC304 ⑦)	12	12
6A	D. CLIP (ME L SP)	Normal ME SP DARK CLIP (IC304 ⑦)	1C	1C
6B	D. CLIP (MP L SP)	Normal MP SP DARK CLIP (IC304 ⑦)	24	24
6C	D. CLIP (ME E LP)	Hi8 ME LP DARK CLIP (IC304 ⑦)	30	30
6D	D. CLIP (MP E LP)	Hi8 MP LP DARK CLIP (IC304 ⑦)	40	40
6E	D. CLIP (ME L LP)	Normal ME LP DARK CLIP (IC304 ⑦)	1F	1F
6F	D. CLIP (MP L LP)	Normal MP LP DARK CLIP (IC304 ⑦)	75	75
70	W. CLIP (ME E SP)	Hi8 ME SP WHITE CLIP (IC304 ⑧)	40	40
71	W. CLIP (MP E SP)	Hi8 MP SP WHITE CLIP (IC304 ⑧)	41	41
72	W. CLIP (ME L SP)	Normal ME SP WHITE CLIP (IC304 ⑧)	72	72
73	W. CLIP (MP L SP)	Normal MP SP WHITE CLIP (IC304 ⑧)	76	76
74	W. CLIP (ME E LP)	Hi8 ME LP WHITE CLIP (IC304 ⑧)	2E	2E
75	W. CLIP (MP E LP)	Hi8 MP LP WHITE CLIP (IC304 ⑧)	2A	2A
76	W. CLIP (ME L LP)	Normal ME LP WHITE CLIP (IC304 ⑧)	72	72
77	W. CLIP (MP L LP)	Normal MP LP WHITE CLIP (IC304 ⑧)	76	76
78	REC/PB MX (REC)	REC matrix adjustment (IC306 ⑬)	AF	
79	REC/PB MX (PB)	Not used. (IC306 ⑬)	AF	
7A	1.5 IR	Not used. (IC306 ⑧)	AF	
7B	1.5 DEV	1.5 MHz deviation adjustment (IC306 ⑨)	AF	
7C	1.7 IR	Not used. (IC306 ⑥)	AF	
7D	1.7 DEV	1.7 MHz deviation adjustment (IC306 ⑦)	AF	
7E	AUDIO FADER	Audio fader (IC304 ⑬)	00	00
7F	INDEX VCO	PB VCO oscillation frequency adjustment (IC306 ⑭)	A8	

Table 10-4 (3).

Address	Name	Function () indicates the adjusting voltage output terminal.	Adjusting Data	
			Initial Value	Memo Column
80	ZOOM CONT B	Zoom microphone control B (IC305 ⑱)	00	00
81	ZOOM CONT A	Zoom microphone control A (IC305 ⑱)	00	00
82 to 8F		Not used.	FF	FF
90	ZOOM CONT A (ZOOM POS 0)	Zoom microphone control A (IC305 ⑱)	6B	6B
91	ZOOM CONT B (ZOOM POS 0)	Zoom microphone control B (IC305 ⑱)	00	00
92	ZOOM CONT A (ZOOM POS 1)	Zoom microphone control A (IC305 ⑱)	6B	6B
93	ZOOM CONT B (ZOOM POS 1)	Zoom microphone control B (IC305 ⑱)	04	04
94	ZOOM CONT A (ZOOM POS 2)	Zoom microphone control A (IC305 ⑱)	65	65
95	ZOOM CONT B (ZOOM POS 2)	Zoom microphone control B (IC305 ⑱)	09	09
96	ZOOM CONT A (ZOOM POS 3)	Zoom microphone control A (IC305 ⑱)	60	60
97	ZOOM CONT B (ZOOM POS 3)	Zoom microphone control B (IC305 ⑱)	0B	0B
98	ZOOM CONT A (ZOOM POS 4)	Zoom microphone control A (IC305 ⑱)	5B	5B
99	ZOOM CONT B (ZOOM POS 4)	Zoom microphone control B (IC305 ⑱)	0D	0D
9A	ZOOM CONT A (ZOOM POS 5)	Zoom microphone control A (IC305 ⑱)	56	56
9B	ZOOM CONT B (ZOOM POS 5)	Zoom microphone control B (IC305 ⑱)	16	16
9C	ZOOM CONT A (ZOOM POS 6)	Zoom microphone control A (IC305 ⑱)	50	50
9D	ZOOM CONT B (ZOOM POS 6)	Zoom microphone control B (IC305 ⑱)	21	21
9E	ZOOM CONT A (ZOOM POS 7)	Zoom microphone control A (IC305 ⑱)	4A	4A
9F	ZOOM CONT B (ZOOM POS 7)	Zoom microphone control B (IC305 ⑱)	30	30
A0	ZOOM CONT A (ZOOM POS 8)	Zoom microphone control A (IC305 ⑱)	40	40
A1	ZOOM CONT B (ZOOM POS 8)	Zoom microphone control B (IC305 ⑱)	3C	3C
A2	ZOOM CONT A (ZOOM POS 9)	Zoom microphone control A (IC305 ⑱)	31	31
A3	ZOOM CONT B (ZOOM POS 9)	Zoom microphone control B (IC305 ⑱)	45	45
A4	ZOOM CONT A (ZOOM POS A)	Zoom microphone control A (IC305 ⑱)	25	25
A5	ZOOM CONT B (ZOOM POS A)	Zoom microphone control B (IC305 ⑱)	51	51
A6	ZOOM CONT A (ZOOM POS B)	Zoom microphone control A (IC305 ⑱)	15	15
A7	ZOOM CONT B (ZOOM POS B)	Zoom microphone control B (IC305 ⑱)	56	56
A8	ZOOM CONT A (ZOOM POS C)	Zoom microphone control A (IC305 ⑱)	0D	0D
A9	ZOOM CONT B (ZOOM POS C)	Zoom microphone control B (IC305 ⑱)	60	60
AA	ZOOM CONT A (ZOOM POS D)	Zoom microphone control A (IC305 ⑱)	09	09
AB	ZOOM CONT B (ZOOM POS D)	Zoom microphone control B (IC305 ⑱)	61	61
AC	ZOOM CONT A (ZOOM POS E)	Zoom microphone control A (IC305 ⑱)	04	04
AD	ZOOM CONT B (ZOOM POS E)	Zoom microphone control B (IC305 ⑱)	6B	6B
AE	ZOOM CONT A (ZOOM POS F)	Zoom microphone control A (IC305 ⑱)	00	00
AF	ZOOM CONT B (ZOOM POS F)	Zoom microphone control B (IC305 ⑱)	6B	6B

WIDE

TELE

Table 10-4 (4).

SECTION 9

MECHANICAL SECTION ADJUSTMENTS

Mechanical Section Adjustments

For details on the adjustments and checks of mechanical section and the mechanical parts, refer to the separate volume- "8 mm Video Mechanical Adjustment II [FL mechanism (Q mechanism)]".

9-1. OPERATING WITH THE CASSETTE COMPARTMENT HOLDER ASSEMBLY REMOVED (Refer to Fig. 9-1.)

1. Loading

- 1) Refer to "2. Disassembly", and supply the power with the external section removed (however, leave the cabinet (R) connected so that the adjusting remote control unit can be connected.). (So that the mechanical deck section can be operated.)
- 2) Connect the adjusting remote control unit, and turn ON the HOLD switch.
- 3) Select page: 1, address: 00, and set data: 01.
(Release of the protect)
- 4) Select page: D, address: 01, and set data: 01.
(Test mode 1 setting)
- 5) Press the PAUSE button of adjusting remote control unit.
- 6) Turn off the HOLD switch of the adjusting remote control unit. (The adjusting remote control unit can be disconnected after this.)
- 7) The unit will be set into the loading mode when the lock board release arm ① is pressed in the direction of the arrow.
(To set the unit into the record mode, hold the push switch ② in place with the cohesion tape ③ before performing this operation.)
- 8) After completing all operations, be sure to perform "5. Processing after completing operations".

2. Setting the unit into the playback condition

- 1) Perform steps 1) to 7) of "1. Loading".
- 2) Press the playback button.

3. Setting the unit into the recording condition

- 1) Perform steps 1) to 7) of "1. Loading".
- 2) Press the record switch.

Note: Refer to "VIDEO SECTION ADJUSTMENTS" to set the models without the record switch into the record condition.

4. Ejecting

- 1) Press the EJECT button.

5. Processing after completing operations

- 1) Connect the adjusting remote control unit, and turn on the HOLD switch.
- 2) Select page: 1, address: 00, and set data: 01.
- 3) Select page: D, address: 01, and set data: 00.
- 4) Press the PAUSE button of the adjusting remote control unit.
- 5) Remove the power supply from the unit.

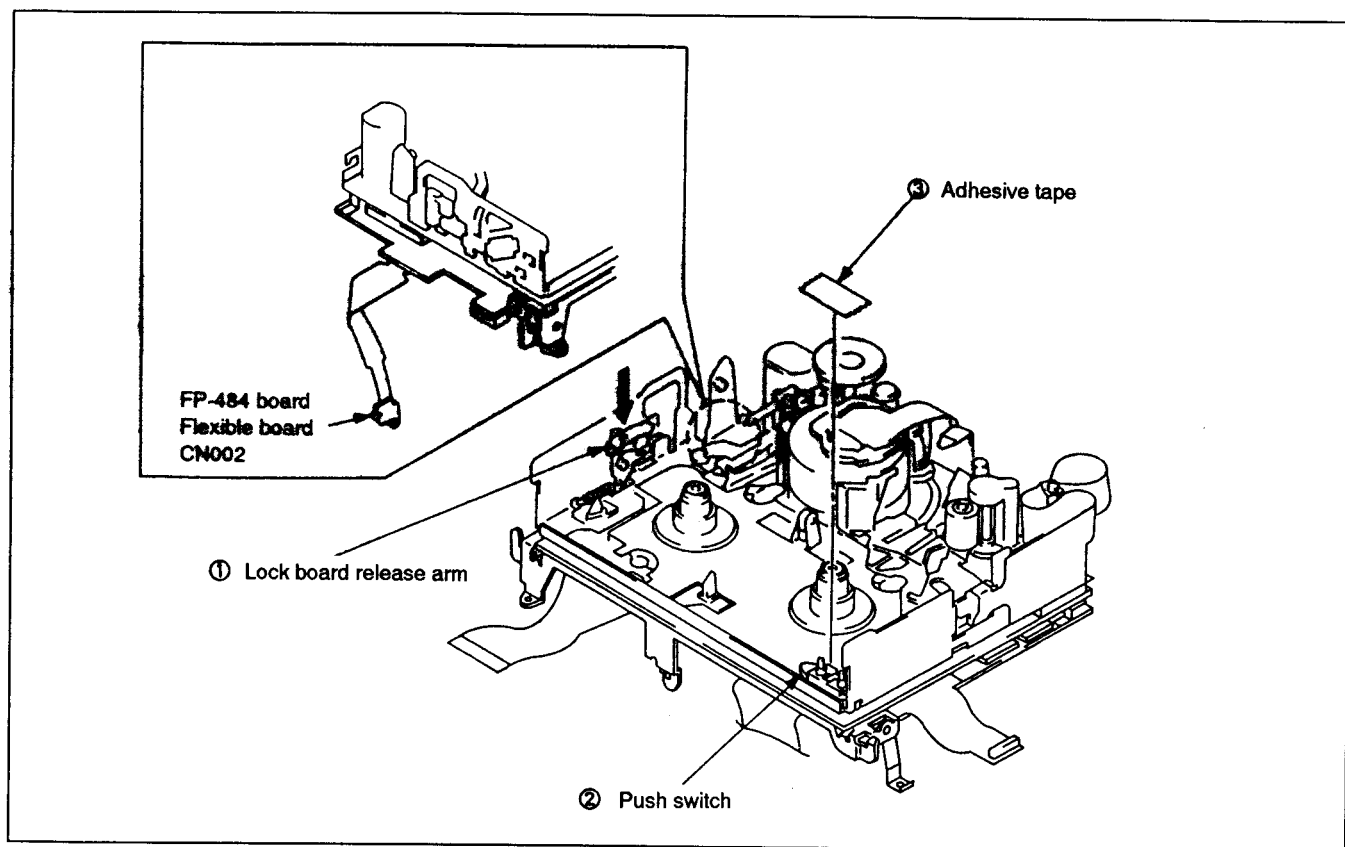


Fig. 9-1.

9-2. TAPE PATH ADJUSTMENT

1. Preparations for adjustment

- 1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
- 2) Connect the adjusting remote control unit to the remote terminal (LJ-13 board J511).
- 3) Turn on the HOLD switch of the adjusting remote control unit.
- 4) Select page: 1, address: 00, and set data: 01.
(Release of the protect)
- 5) Select page: D, address: 01, and set data: 03.
(Set the track shift mode. The adjusting remote control unit can be disconnected if its PAUSE button is pressed. In this case, be sure to perform "9-1-5. Processing after completing operation" after completing adjustments.)
- 6) Connect the oscilloscope.
Channel 1-FP-484 board Pin ⑭ of CN002
External trigger-FP-484 board Pin ⑨ of CN002
(Connect the oscilloscope via the measuring pin for the video section (J-6082-140-A).)
- 7) Playback the alignment tape (WR5-1CP) for tracking.
- 8) Check that the RF waveform of the oscilloscope is flat at both the entrance and the exit sides.
If not flat, perform necessary adjustment according to the separate 8 mm Video Mechanical Adjustment II FL mechanism (Q mechanism).
- 9) Perform "9-1-5. Processing after completing operations", after completing adjustments.

FP-484 board CN002

1	LANC SIG
2	N.C.
3	RF GND
4	CAP FG
5	REC 1B
6	REC 2B
7	REC 1A
8	REC 2A
9	RF SWP
10	$\overline{1/2 \text{ RF SWP}}$
11	PB RF CH1
12	PB RF CH2
13	RF GND
14	PB RF OUT

SECTION 10

VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 284.

10-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

10-1-1. Equipments to be used

- 1) TV monitor
- 2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
- 3) Frequency counter
- 4) Pattern generator with video output terminal
- 5) Digital voltmeter
- 6) Audio generator
- 7) Audio level meter
- 8) Audio distortion meter
- 9) Audio attenuator
- 10) Regulated power supply
- 11) Alignment tape
 - For tracking adjustment (WR5-1CP)
Part Code: 8-967-995-07
 - For normal mode video frequency characteristics adjustment (WR5-6C)
Part Code: 8-967-995-17
 - For Hi8 mode video frequency characteristics adjustment (WR5-7CE)
Part Code: 8-697-995-18
 - For checking normal mode operations
For SP (WR5-5CSP)
Part Code: 8-967-995-47
 - Or (WR5-4CSP)
Part Code: 8-967-995-46
 - For LP (WR5-4CL)
Part Code: 8-967-995-56
 - For checking AFM stereo operations (WR5-9CS)
Part Code: 8-967-995-28
 - For checking Hi8 mode operations (ME tape)
For SP (WR5-8CSE)
Part Code: 8-967-995-48
 - For LP (WR5-8CLE)
Part Code: 8-967-995-57
- 12) Adjusting remote control unit (J-6082-053-A)
- 13) Measuring pin jig for video section
Part Code: J-6082-140-A
- 14) CF-4 board extension cord (48P, 0.8 mm)
Part code: J-6082-177-A

10-1-2. Precautions Upon Adjustments

The EVF (Electronic viewfinder) section is not required for adjusting the video section.

Remove the following connector if removing the EVF section.

1. CN301 of VS-101 board (Pin 4)

The front panel assembly is not required for adjusting the video section.

Remove the following connectors if removing the front panel assembly.

1. CN902 of MA-174 board (Pin 8)
2. CN903 of MA-174 board (Pin 3)
3. CN401 of RM-58 board (Pin 3)

Cabinet (R) is necessary for connecting the adjusting remote control unit.

Use the CF-4 board extension cord (J-6082-177-A) when adjusting the video circuit and audio circuit.

Cabinet (L) is not required. Remove it.

The audio board (AU-151 board) is only required for "Audio System Adjustment" and the "REC AFM Level Check" of "Video Adjustment". Remove the following connectors.

1. CN603 of AU-151 board (Pin 30)
2. CN602 of AU-151 board (Pin 3)

The lens block (Including the VD-22 and SE-26 boards) is only required for "Power Supply System Adjustment". Remove the following connectors and one mounting screw, and remove it from the VC-135 board.

1. CN002 of VD-22 board
2. CN851 of VC-135 board
3. CN801 of VC-135 board

10-1-3. Connectors for Adjustments (FP-484 board CN002)

Some video section adjustment points are concentrated on the FP-484 board CN002. Connect the measuring instrument via a measuring pin jig (J-6082-140-A).

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	2	RF GND
3	REC 1B	4	REC 1A
5	RF SWP	6	PB RF CH1
7	RF GND	8	N.C
9	CAP FG	10	REC 2B
11	REC 2A	12	1/2 RF SWP
13	PB RF CH2	14	PB RF OUT

Table 10-1.

10-1-4. Connecting the Equipments

Connect the measuring instruments as shown in Fig. 10-1 according to the input terminal specifications (S VIDEO or VIDEO), adjust the power supply switch (CAMERA/OFF/PLAYER) (FK-4 board S119) to the "PLAYER" position, and perform the adjustments.

The input terminal is specified in the () in the signal column. Either input terminal can be used when there are no specifications. However, the S video input terminal will have the priority. When adjusting with the video input terminal input, disconnect the connector from the S video input terminal.

Note: If the VIDEO input is used for adjustments which specify for the S VIDEO input to be used, the product specifications of the unit may not be satisfied in some cases. Be sure to perform according to the specifications. When adjustments are performed with the S video output terminal VTR as the signal source, the efficiencies of the unit may be affected by the VTR. It is recommended that a pattern generator with a Y/C separation output terminal be used as much as possible.

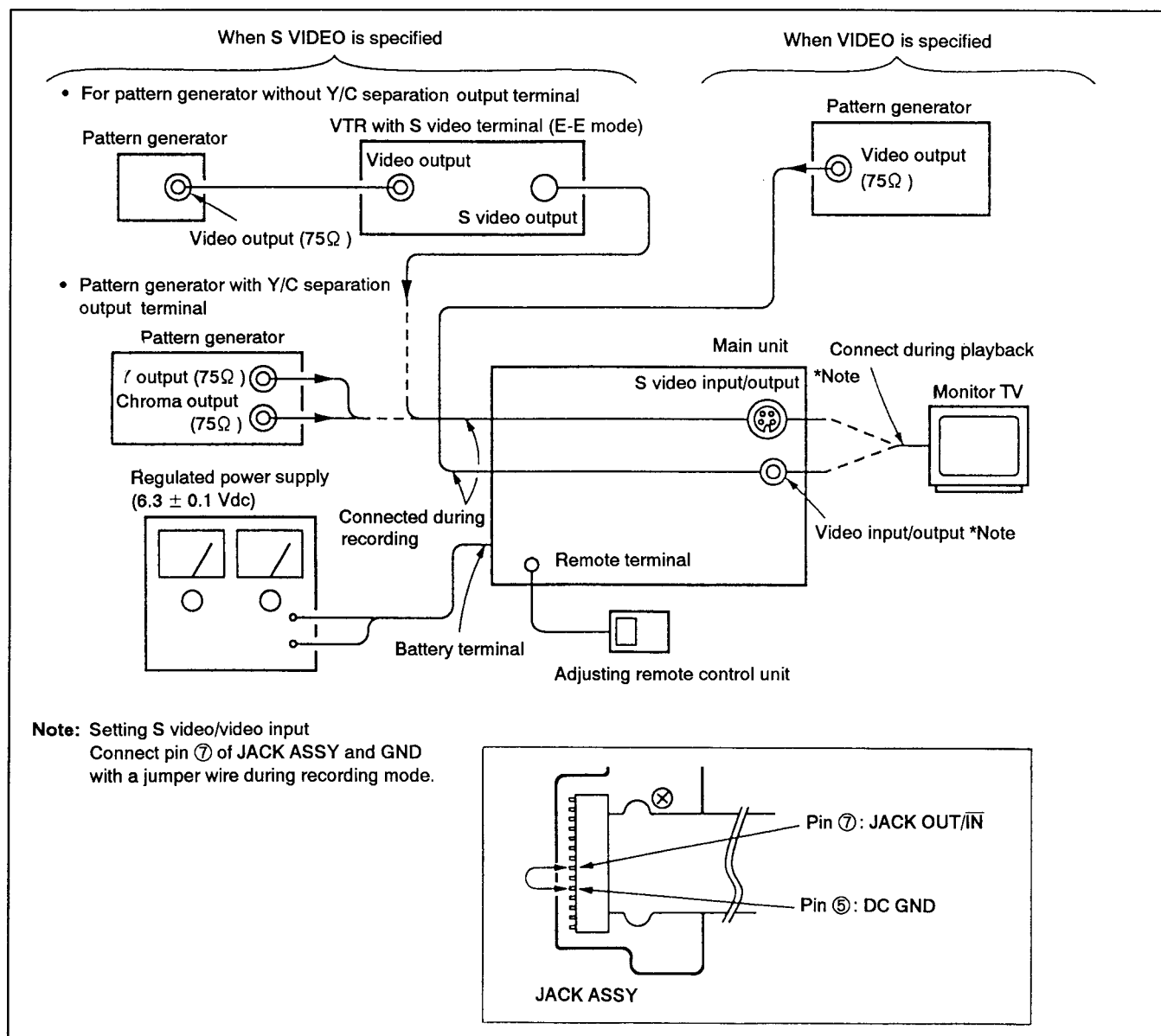


Fig. 10-1.

10-1-5. How to Set the REC Mode In the Model without REC Switch

1. REC key forbidden accept mode cancel
 1. Connect the adjustment remote controller to the REMOTE terminal.
 2. Turn on the power.
 3. Turn on the HOLD switch of the adjustment remote controller.
 4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
 5. Select the page: D address: 02, and set the data to 83. (REC key forbidden accept mode cancel)
 6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

The REC key is accepted through the above procedure. The adjustment remote controller may be removed, hereafter.

2. REC mode setting

1. Connect Pin ⑤ of CN924 (KEY IN 2) and Pin ④ of CN924 (KEY OUT 0) on VC-135 board with a jumper wire until the VTR is set to REC mode.

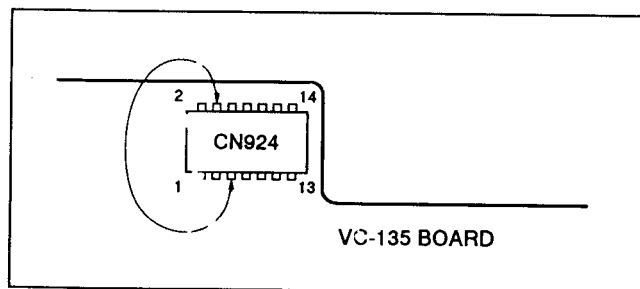


Fig. 10-2.

3. Procedure after completed the adjustment

Be sure to return the mode to REC key forbidden accept mode after adjustment.

1. Connect the adjustment remote controller to the REMOTE terminal.
2. Turn on the power.
3. Turn on the HOLD switch of the adjustment remote controller.
4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
5. Select the page: D address: 02, and set the data to 82. (Setting of the REC key forbidden accept mode)
6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

10-1-6. Checking the Input Signals

As the video signal obtained from the pattern generator is used as the adjusting signal for adjusting the VTR section, this video output signal must be within the given specifications.

1. For S VIDEO Input

Connect the oscilloscope to the Y signal terminal of the S video input/output terminal, and check that the sync signal of the Y signal is approximately 0.3 Vp-p and that the amplitude of the video section is approximately 0.7 Vp-p. (When the VTR with a S video output terminal is used, check that the chroma signal and burst signal have not remained as well.) Connect the oscilloscope to the chroma signal terminal of the S VIDEO IN terminal, and check that the burst signal amplitude of the chroma signal is approximately 0.3 Vp-p and flat, and that the amplitude ratio of the burst signal to the chroma signal is 0.30: 0.66. The Y and chroma signals used in the adjustment are shown in Fig. 10-3.

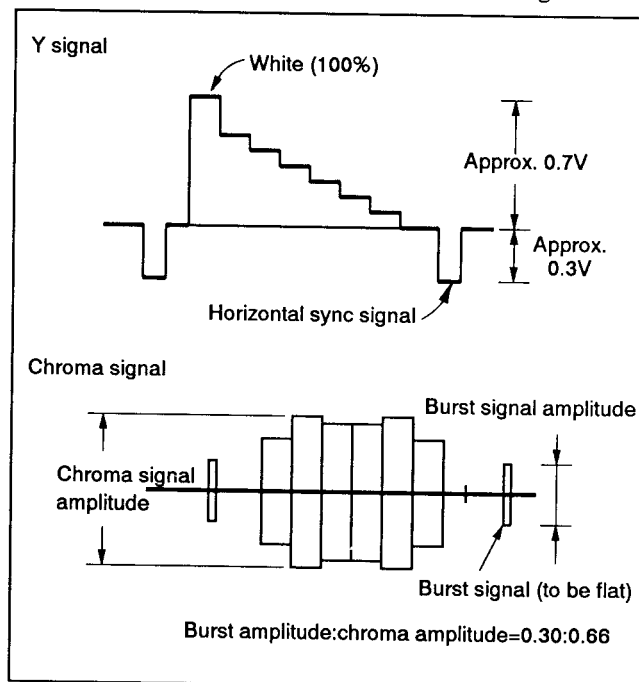


Fig. 10-3. Color bar signal of pattern generator

2. For VIDEO Input

Connect the oscilloscope to the video input/output terminal, and check that the amplitude of the sync signal of the video signal is approximately 0.3V, the amplitude of the video section is approximately 0.7V, the amplitude of the burst signal is approximately 0.3V and flat, and that the level ratio of the burst signal and the [red] signal is 0.30: 0.66.

The video signal (color bar) used for electric adjustments of the VTR section is shown in Fig. 10-4.

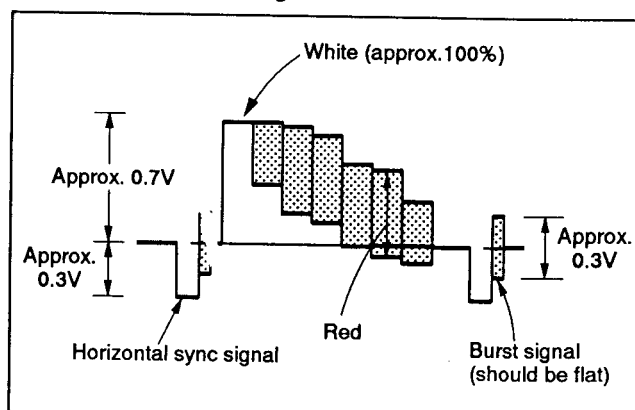


Fig. 10-4. Color bar signal of pattern generator

10-1-7. Alignment Tape

The following table lists alignment tapes which are available.
Use the tape specified in the signal column for each adjustment.

If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Record- ing mode	Tape type	Tape speed	Recording contents		Usage
				Video area	PCM area	
Tracking WR5-1CP	L	MP	SP	CH2: Signal for 1 MHz tape path adjustment		Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-7CE	E	ME	LP	RF sweep 0 to 15 MHz Marker 2, 4.5, 7, 8.5, 10 MHz		Frequency characteristics adjustment
Video frequency characteristics WR5-2C	L	MP	LP	RF sweep Marker 1, 3.58, 5.5, 7 MHz		
Operation check (SP mode) WR5-5CSP	L	MP	SP	- Video signal Color bar 4 minutes Monoscope 4 minutes - Audio signal (AFM) 400 Hz 60% modulation	- Audio signal (PCM) Monoscope section 20 Hz 20 sec. 400 Hz 20 sec. 14 kHz 20 sec. } Repeated 4 times - Color bar section 1 kHz 4 minutes	Checking operations
Operation check WR5-8CSE	E	ME	SP		Audio signal (PCM) 400 Hz	
Operation check WR5-4CL	L	MP	LP	- Video signal Color bar 4 minutes Monoscope 4 minutes - Audio signal (AFM) 400 Hz 60% modulation		
Operation check WR5-8CLE	E	ME	LP		Audio signal (PCM) 400 Hz	
AFM stereo Operation check WR5-9CS	L	MP	SP	- Video signal Color bar 4 minutes Monoscope 4 minutes - Audio signal (AFM) Stereo section (color bar) Lch: 400 Hz, Rch: 1 kHz $\left(\begin{array}{l} \text{L+R:} \\ 1.5 \text{ MHz} \pm 60 \text{ kHz DEV} \\ \text{L-R:} \\ 1.7 \text{ MHz} \pm 30 \text{ kHz DEV} \end{array} \right)$ - Bilingual section (Monoscope) MAIN: 400 Hz (1.5 MHz $\pm$ 60 kHz DEV) SUB: 1 kHz (1.7 MHz $\pm$ 30 kHz DEV)	Audio signal (PCM) 400 Hz 8 minutes	AFM stereo Checking operations

Note: Recording mode

L Normal (Conventional) mode
E hi8 (hi band) mode

Tape type

MP Particle type metal tape
ME Evaporated type metal tape

Table 10-2.

Fig. 10-5. shows the 75% color bar signals recorded on the alignment tape.

Note: Measured at VIDEO OUT terminal (75Ω termination).

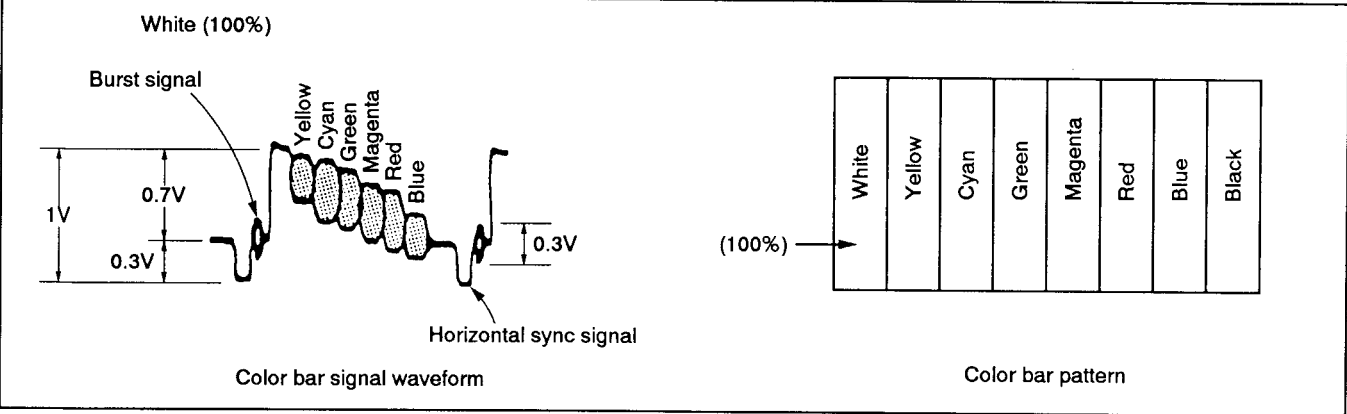


Fig. 10-5. Alignment tape color bar signal

10-1-8. Output Level and Impedance

- Video output Pin jack
Output signal: 1 Vp-p, 75Ω unbalanced, sync negative
- S video output Four pins mini DIN
Luminance signal: 1 Vp-p, 75Ω unbalanced, sync negative
Color signal: 0.3 Vp-p, 75Ω unbalanced
- Audio output Pin jack
Specified output: -7.5 dBs
Output impedance: Below 2.2 kΩ

10-1-9. Record Mode (Normal/Hi8) Switchover

The record mode (Normal/Hi8) of this unit is switched as shown in the following table. The playback mode (Normal/Hi8) is switched automatically according to the record mode of the tape played back.

Hi8 Switch (CF-4 board S203)	Tape Used	Record Mode
Automatic	ME	Hi8
	Hi8 MP	
	MP	Normal
Off	ME	Normal
	Hi8 MP	
	MP	

Table 10-3.

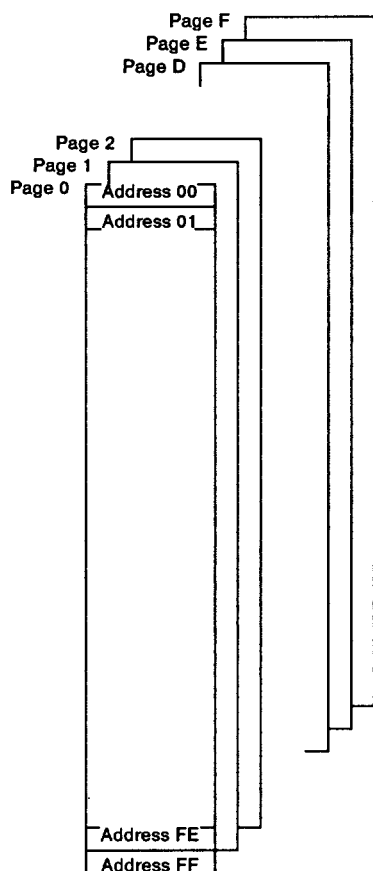
10-1-10. Service Mode

1. Setting the Service mode

The service mode consists of the adjustment mode which adjusts the EVR and the test mode which displays the condition of the unit.

The unit can be shifted into the test mode and adjustment mode by connecting the adjusting remote control unit (set the HOLD switch to the HOLD side).

(1) Service LANC memory map



Page	Page assignment
0	
1	Mode controller RAM, I/O (Note 1)
2	
3	Mechanism controller RAM, I/O (Note 1)
4	
5	
6	
7	Camera controller RAM, I/O (Note 1)
8	
9	
A	Camera controller RAM, I/O (Note 1)
B	
C	
D	VTR EE PROM (Note 2)
E	Camera EE PROM (VAP) (Note 3)
F	Camera EE PROM (Note 3)

Note 1: If the data of this page is rewritten using the adjusting remote control unit to set the adjustment mode or test mode, this data will not be written in the EEPROM (non-volatile memory). The original condition (normal condition) can be returned by removing the main power supply (6.3V).

Note 2: The data of this page is written in the EEPROM (VC-135 board IC923).

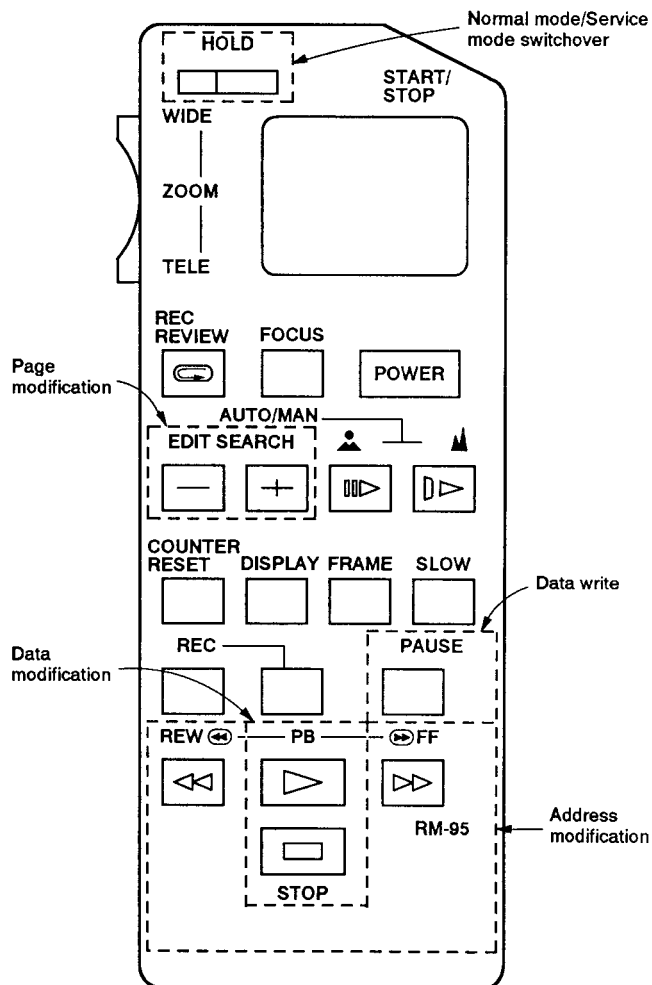
Note 3: The data of this page is written in the EEPROM (VC-135 board IC701).

Adjusting Remote Control Unit LCD Display

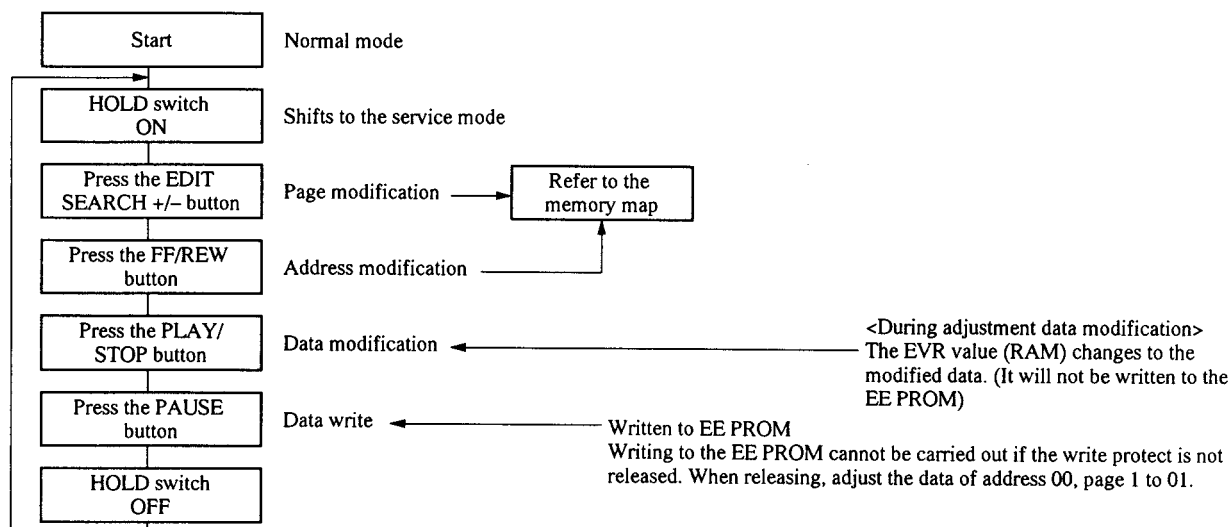
0:00:00

Page Data Address

Adjusting remote control unit RM-95 (J-6082-053-A)



Shifting to the Service Mode Using the Adjusting Remote Control Unit



Command Name	Command Function	Normal LANC command
Page Up	Page +1	Edit Search +
Page Down	Page -1	Edit Search -
Direc Page Set	Sets the specified page	Event Clear
Address Up	Address +1	Fast Forward
Address Down	Address -1	Rewind
Data Up	Data +1	Play Back
Data Down	Data -1	Stop
Store	Writes the data to the EE PROM. RAM	Pause

2. Page D Write Protect

Release/set the page D write protect.

Page 1	Address 00
--------	------------

Data	Function
00	Normal (Write protect condition)
01	Write protect release

3. Test Mode Setting

Each type of test mode is set/released. Release the protect (page: 1, address: 00, data: 01), before setting the data.

Page D (or Page 4)	Address 01
--------------------	------------

Data	Function
00	Normal
01	Test mode 1 Various emergency inhibition and release Drum, capstan, loading motor, reel, tape top, end, DEW SP/LP automatic distinction inhibition, manual switchover (EDIT SW ON: LP, OFF: SP) 5 minutes pause release inhibition Power off inhibition release by battery end
02	Test mode 2 Do not use
03	Test mode 3 Track shift Plays back the track shift Rear lock distinction inhibition during PB SP/LP automatic distinction inhibition, manual switchover (EDIT SW ON: LP, OFF: SP)
04	Test mode 4 Rear lock mode Rear lock playback is performed SP/LP automatic distinction inhibition, manual switchover (EDIT SW ON: LP, OFF: SP)
05	Test mode 5 SP/LP automatic distinction inhibition, manual switchover (EDIT SW ON: LP, OFF: SP)

- ※ Page: D and page: 4 have the same functions. However, the data cannot be written in the non-volatile memory (EEPROM) for page: 4.
- ※ This address data will be recorded on the non-volatile memory by pressing the PAUSE button on the adjusting remote control unit for page: D. Take note, as when this happens, the test mode will not be released even if the main power is turned off (6.3 Vdc).
- ※ Be sure to return the data of this address data to 00 after completing adjustments/repairs, and press the PAUSE button on the adjusting remote control unit.

4. Emergency code

Faults (errors) can be checked.

Page D	Address 06
--------	------------

First emergency code

.....The first error code generated

Page D	Address 07
--------	------------

Last emergency code

..... The last error code generated (this data will be renewed each time an error occurs.)

- ※ Be sure to rewrite the data of addresses 06 and 07 to 00 after completing repairs/adjustments.
- ※ When rewriting data, be sure to press the PAUSE button of the remote control unit after setting the data.

Code	Error condition
00	No error
01	Loading motor error
02	Reel error during unloading
03	Other reel errors
04	Capstan error
05	FG error during drum start up
06	PG error during drum start up
07	FG error during drum regular condition
08	PG error during drum regular condition
09	Phase error during drum regular condition

5. Emergency mode

The operation mode during an error outbreak can be checked.

Page D	Address 08
--------	------------

First emergency mode

.....The operation mode when the first error is generated

Page D	Address 09
--------	------------

Last emergency mode

.....The operation mode when the last error is generated
(This data will be renewed each time an error occurs.)

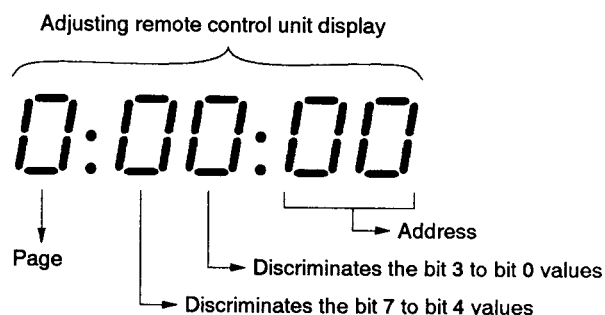
※ Be sure to rewrite the data of addresses 08 and 09 to 00 after completing repairs/adjustments.

※ When rewriting data, be sure to press the PAUSE button of the adjusting remote control unit after setting the data.

Code	Error condition
00	BEFOR INITIALIZE
01	EJECTED
02	NORMAL STOP
03	FF
04	NORMAL REC
06	NORMAL PB
07	PB PAUSE
12	LOADING
14	REC PAUSE
27	1/5 SLOW
31	UNLOADING
46	CUE
56	REVIEW
62	STOP TAPE END
67	FRAME
72	STOP TAPE TOP
83	REWIND
85	REC REVIEW(+)
95	REC REVIEW(-)
A2	EMERGENCY STOP
A5	EDIT SEARCH(+)
B1	EMERGENCY UNLOADING
B2	STOP EMERGENCY 1
B5	EDIT SEARCH(-)
C2	STOP EMERGENCY 2
E2	STOP NO CASSETTE
F5	EDIT PAUSE

6. Bit Value Discrimination

It is necessary to discriminate the bit values with the display data on the adjusting remote control unit for the following items. Use the following table to discriminate if the bit value is "1" or "0".



Remote Control Unit Display	Bit Value			
	bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
Ⓐ→ 8	1	0	0	0
9	1	0	0	1
A (P)	1	0	1	0
B (b)	1	0	1	1
C (c)	1	1	0	0
D (d)	1	1	0	1
Ⓑ→ E (E)	1	1	1	0
F (F)	1	1	1	1

(Example) If the remote control unit display data is "8E", the bit value of bit7 to bit4 can be discriminated from column Ⓐ, and that of bit3 to bit0 from column Ⓑ.

7. Cassette Compartment Lock Switch Check

Page 1	Address 23
--------	------------

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
					CC LOCK		

"0"=Up
 "1"=Down (Lock)

8. Mechanism Section Switches Check, Etc.

Page 1	Address 3E
--------	------------

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
MSW C	Mode switch MSW B	MSW A		REC PROOF	ME/MP	PB E/L	Hi8 MP

"1"=Record prohibited
 "0"=Record possible

"1"=ME tape
 "0"=MP tape

"1"=Hi8 mode playback
 "0"=Others

"1"=Hi8 MP tape
 "0"=Others

Mode Switch Position	Adjusting Remote Control Unit Display
READY (STOP)	2*
GL	4*
USE	6*
EJECT	8*
RP (REC, PB, FF, REW, CUE, REVIEW, PAUSE)	A*
LS	C*
BL	D*

*: 0 to F

9. Mechanism Control (VS-101 board IC153) Condition Check

Page 1	Address 3D
--------	------------

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
VIDEO MUTE	AUDIO MUTE	VA PB MODE	JOG	PB CLOG	REC CLOG	SYNC DET	PB SP/LP DET
							“1”=LP playback “0”=Others
							“1”=VTR SYNC present “0”=No VTR SYNC
						“1”=Head clog generation “0”=Others	
						“1”=No video signal “0”=Video signal present	
							“1”=Variable speed playback “0”=Others
							“1”=PB mode “0”=E-E mode
							“1”=Mute “0”=Audio output
							“1”=Mute “0”=Video output

11. Mechanism Control A/D Port Input Voltage Check

Page 4	Address 14
--------	------------

Checking method:

- 1) Set data 02 to page: 4, address: 0E.
(A/D conversion processing active)
- 2) Set the following data to page: 4, address: 13, and select the A/D port to be displayed.

Data	Operation
00	Pin ⑥: AN0 (T REEL FG)
01	Pin ⑥: AN1 (S REEL FG)
02	Pin ⑥: AN2 (ATF ERROR)
03	Pin ⑥: AN3 (BATT SENS)
04	Pin ⑥: AN4 (DEW)

- 3) Check the data of page: 4, address: 14.

Adjusting Remote Control Unit Display Data	A/D Port Input Voltage
FF to 00	Approx. 5 Vdc to 0 Vdc

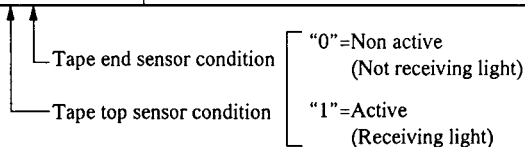
12. Tape Top/End Sensor Condition

Page 4	Address 0A
--------	------------

Checking method:

- 1) Set data 10 to page: 4, address: 0E.
(Tape top/end sensor condition sampling processing active)
- 2) Check the data of page: 4, address: 0A.

Adjusting Remote Control Unit Display Data	Tape Top/End Sensor Condition
0 0	Tape present (Middle of tape)
0 1	Tape end
1 0	Tape top
1 1	No tape



13. Individual Operations of the Drum, Capstan, and Loading Motor

Page 4	Address 11
--------	------------

- 1) Adjust the mechanical section to the loading completion condition.
- 2) Release the protect.
Page: 1, address: 00, data: 01
- 3) Set data: 01 to page: 4, address: 0E.
(Control permission from the adjusting remote control unit of the motor)
- 4) By setting the data in the following table to page: 4, address: 11, the corresponding motors can be operated individually.

Data	Operation
00	Normal
02	Drum forward rotation
04	Drum reverse rotation
06	Capstan forward rotation
08	Capstan reverse rotation
0A	Loading motor forward rotation
0C	Loading motor reverse rotation
01	All motors stop
03	
05	
07	
09	
0B	
0D	
0F	

- 6) After checking the operations, turn off the main power (6.3 Vdc).

14. Key Matrix Input Check

Page 1	Address 68 to 6F
--------	------------------

The corresponding bit when the switch is on is "1".

	Bit 7	Bit 6 (K IN 6)	Bit 5 (K IN 5)	Bit 4 (K IN 4)	Bit 3 (K IN 3)	Bit 2 (K IN 2)	Bit 1 (K IN 1)	Bit 0 (K IN 0)
Address 68 (K OUT 0)			Video power supply (FK-4 S119)	Data screen (FK-4 S115)	Pause (FK-4 S112)	Record	Eject (FK-4 S103)	Hi-Fi sound (1) (CF-4 S201)
Address 69 (K OUT 1)		Steady shot (CF-4 S216)	Camera power supply (FK-4 S118, 119)	Fast forward (FK-4 S116)	Playback (FK-4 S113)	Rewind (FK-4 S110)	Stop (FK-4 S104)	Hi-Fi sound (2) (CF-4 S201)
Address 6A (K OUT 2)			Zoom microphone (MA-174 S901)	Zero memory (FK-4 S117)	Edit search (+) (FK-4 S114)	Edit search (-) (FK-4 S111)	Counter reset (FK-4 S105)	Edit (CF-4 S202)
Address 6B (K OUT 3)		Auto-lock (CF-4 S217)		Shutter speed (CF-4 S212)	Time (CF-4 S209)	Date (CF-4 S207)	White balance (CF-4 S204)	Hi8 (CF-4 S203)
Address 6C (K OUT 4)		Exposure (+) (CF-4 S218)		Focus (CF-4 S213)	Color/mode (CF-4 S210)	Memory (CF-4 S208)	Superimpose on/off (CF-4 S205)	Input/output
Address 6D (K OUT 5)		Exposure (-) (CF-4 S219)	Area (CF-4 S215)	Summer time (CF-4 S214)	Exposure (CF-4 S211)	Fader (MA-174 S902)	Start/stop (CF-4 S206)	

15. Hi8 Switch, Edit Switch Check

Page 1		Address 0A					
Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
		Hi8	Edit				

"1"=Edit ON
 "0"=Edit OFF

"1"=Off
 "0"=Auto

16. Input/Output Switch, HI-FI Switch Check

Page 1		Address 0B					
Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
		Hi-Fi		Input/output			

"1"=Input
 "0"=Output

Switch Position		
1	0	1
2	1	0
Stereo	0	0

17. Wireless Remote Control Unit Reception Content Check

Page 1		Address 1E	
Wireless remote control unit key pressed		Data	
None		FF	
TELE		9A	
WIDE		9B	
Start/stop		99	
Rewind		1B	
Fast forward		1C	
Stop		18	
Playback		1A	
Data screen		5A	
Pause		19	

18. White Balance Mode, Focus Mode Display/Switchover

Page 1	Address 9A
--------	------------

The mode can be switched when the data of page 1, address A3 is set to 04.

Data	White Balance Mode
*1	INDOOR
*2	OUTDOOR
*3	HOLD
*6	AUTO

Data	Focus Mode
0*	Manual
1*	Auto

* 0 to F

19. Electronic Shutter Speed Display/Switchover

Page 1	Address 9B
--------	------------

The speed can be switched when the auto-lock switch is turned OFF.

Data	Shutter Speed
00	1/50
01	1/100
02	1/250
03	1/1000
04	1/2000
05	1/4000
06	1/10000

20. LCD, LED Check, Etc.

Page 1	Address A3
--------	------------

Data	Mode
00	Normal
01	Key input prohibited
02	All segments of LCD, LED light up
04	Camera function renewal prohibited

21. Time Code Check

Page 1	Address BB to BE
--------	------------------

Data	Adjusting remote control unit display data contents	
BB	Hour	} BCD code ("FF" when the time code is not recorded/played back)
BC	Minutes	
BD	Seconds	
BE	Frame No.	

22. Data Code Check

Page 1	Address D0 to D5
--------	------------------

Data	Adjusting remote control unit display data contents	
D0	Second	} BCD code
D1	Minute	
D2	Hour	
D3	Day	
D4	Month	
D5	Year	

23. Page D Address List

Note 1: The adjustment data initial value is data input before performing video section adjustment (Page D) when the Page D data has been lost due to some reason.

Note 2: The data listed in the adjusting data memo column are fixed.

After adjusting, check that these data have been rewritten correctly.

Address	Name	Function () indicates the adjusting voltage output terminal.	Adjusting Data	
			Initial Value	Memo Column
00	Category code	World clock standard area	00	00
01	Test mode	Test mode	00	00
02	Destination flag	Destination flag	82	82
03	BATT END	Battery end adjustment	8E	
04	SW POSITION (LOW)	SW POSITION adjustment (Top)	00	
05	SW POSITION (HIGH)	SW POSITION adjustment (Bottom)	80	
06	EMERGENCY code (FIRST)	Error codes and modes are recorded. Rewrite the data of these addresses to 00 after completing repairs/adjustments.	00	00
07	EMERGENCY code (LAST)		00	00
08	EMERGENCY mode (FIRST)		00	00
09	EMERGENCY mode (LAST)		00	00
0A	SR DATA (MP NORMAL SP)	CXA1207 serial data	67	67
0B	SR DATA (MP NORMAL LP)	CXA1207 serial data	5F	5F
0C	SR DATA (ME HI8 SP)	CXA1207 serial data	69	69
0D	SR DATA (ME HI8 LP)	CXA1207 serial data	6F	6F
0E	SR DATA (ME NORMAL SP)	CXA1207 serial data	68	68
0F	SR DATA (ME NORMAL LP)	CXA1207 serial data	5C	5C
10	SR DATA (MP HI8 SP)	CXA1207 serial data	63	63
11	SR DATA (MP HI8 LP)	CXA1207 serial data	5F	5F
12	SR DATA (EDIT ON NORMAL)	CXA1207 serial data	5C	5C
13	SR DATA (EDIT ON HI8)	CXA1207 serial data	65	65
14	CAM TITLE BLU R-Y	Camera titler color adjustment (Blue)	7D	
15	CAM TITLE BLU B-Y	Camera titler color adjustment (Blue)	BA	
16	CAM TITLE GRN R-Y	Camera titler color adjustment (Green)	62	
17	CAM TITLE GRN B-Y	Camera titler color adjustment (Green)	46	
18	CAM TITLE CYN R-Y	Camera titler color adjustment (Cyan)	60	
19	CAM TITLE CYN B-Y	Camera titler color adjustment (Cyan)	86	
1A	CAM TITLE RED R-Y	Camera titler color adjustment (Red)	A0	
1B	CAM TITLE RED B-Y	Camera titler color adjustment (Red)	7A	
1C	CAM TITLE VIO R-Y	Camera titler color adjustment (Violet)	9E	
1D	CAM TITLE VIO B-Y	Camera titler color adjustment (Violet)	BA	
1E	CAM TITLE YEL R-Y	Camera titler color adjustment (Yellow)	82	
1F	CAM TITLE YEL B-Y	Camera titler color adjustment (Yellow)	45	
20		DDS display starting year, EJECT permission etc.	70	70
21		CAMP ON, VTR P ON etc.	00	00
22 to 2C		Not used.	FF	FF
2D	BATT REMAIN level 1	Battery end adjustment	9C	
2E	BATT REMAIN level 2		98	
2F	BATT REMAIN level 3		93	

Table 10-4 (1).

Address	Name	Function () indicates the adjusting voltage output terminal.	Adjusting Data	
			Initial Value	Memo Column
30	REC C 1A (ME)	ME 1Ach REC C level adjustment (IC305 ⑥)	B8	
31	REC C 1A (MP)	MP 1Ach REC C level adjustment (IC305 ⑥)	B8	
32	REC C 1B (ME)	ME 1Bch REC C level adjustment (IC305 ⑦)	B8	
33	REC C 1B (MP)	MP 1Bch REC C level adjustment (IC305 ⑦)	B8	
34	REC C 2A (ME)	ME 2Ach REC C level adjustment (IC305 ⑧)	B8	
35	REC C 2A (MP)	MP 2Ach REC C level adjustment (IC305 ⑧)	B8	
36	REC C 2B (ME)	ME 2Bch REC C level adjustment (IC305 ⑨)	B8	
37	REC C 2B (MP)	MP 2Bch REC C level adjustment (IC305 ⑨)	B8	
38	CAP FG OFFSET	Capstan FG bias adjustment (IC305 ⑬)	80	
39		Not used.	FF	FF
3A		Not used.	FF	FF
3B	MT Q		80	80
3C	MT F0 (E)	Hi8 middle tune f0 frequency (IC306 ④)	60	60
3D	MT F0 (L)	Normal middle tune f0 frequency (IC306 ④)	50	50
3E	MT 2A (E)	Hi8 2Ach frequency characteristics adjustment (IC306 ⑱)	8A	
3F	MT 2A (L)	Normal 2Ach frequency characteristics adjustment (IC306 ⑱)	8A	
40	MT 2B (E)	Hi8 2Bch frequency characteristics adjustment (IC306 ③)	89	
41	MT 2B (L)	Normal 2Bch frequency characteristics adjustment (IC306 ③)	89	
42	MT 1A (E)	Hi8 1Ach frequency characteristics adjustment (IC306 ⑱)	80	
43	MT 1A (L)	Normal 1Ach frequency characteristics adjustment (IC306 ⑱)	80	
44	MT 1B (E)	Hi8 1Bch frequency characteristics adjustment (IC306 ②)	81	
45	MT 1B (L)	Normal 1Bch frequency characteristics adjustment (IC306 ②)	81	
46	REC C RF (REC)	REC C RF level adjustment (IC305 ③)	9E	
47	REC C RF (PB)	PB mode REC C RF level (IC305 ③)	00	00
48	RF CONT (ME)	ME RF CONT (IC305 ⑤)	4B	4B
49	RF CONT (MP)	MP RF CONT (IC305 ⑤)	4B	4B
4A	SYNC AGC	SYNC AGC adjustment (IC304 ⑱)	6D	
4B		Not used.	FF	FF
4C	C COMB	Chroma comb filter adjustment (IC304 ⑱)	90	
4D	IR	IR adjustment (IC304 ④)	A2	
4E	CAR.-E	Hi8 Y-FM carrier frequency adjustment (IC304 ⑤)	A7	
4F	CAR.-L	Normal Y-FM carrier frequency adjustment (IC304 ⑤)	A4	
50	DEV.-E	Hi8 Y-FM deviation adjustment (IC304 ⑥)	A1	
51	DEV.-L	Normal Y-FM deviation adjustment (IC304 ⑥)	95	
52	REC Y CONT (ME E)	Hi8 ME REC Y level adjustment (IC305 ⑫)	8F	
53	REC Y CONT (MP E)	Hi8 MP REC Y level adjustment (IC305 ⑫)	8F	
54	REC Y CONT (ME L)	Normal ME REC Y level adjustment (IC305 ⑫)	88	
55	REC Y CONT (MP L)	Normal MP REC Y level adjustment (IC305 ⑫)	8A	
56	REC Y CONT (PB)	PB mode REC Y level (IC305 ⑫)	90	90
57	PB Y (EE)	EE mode PB Y level (IC304 ⑨)	00	00

Table 10-4 (2).

10-2. POWER SYSTEM ADJUSTMENTS

1. Oscillator Frequency Adjustment (DD-58 board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Q238 collector
Measuring Instrument	Frequency counter
Adjusting Element	RV231
Specified Value	475 ± 5 kHz

Adjusting method:

- 1) Adjust RV231 so that the oscillator frequency becomes the specified value.

2. Voltage Adjustment (DD-58 board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Pin ②⑥ of CN203 (VID 5V)
Measuring Instrument	Digital voltmeter
Adjusting Element	RV232
Specified Value	4.92 ± 0.01 Vdc

Adjusting method:

- 1) Adjust RV232 so that the VID 5V voltage becomes the specified value.

3. Power Voltage Check (DD-58 board)

Mode	Camera record
Subject	Arbitrary
Measuring Instrument	Digital voltmeter
EVR 5V check	
Measurement Point	Pins ② and ④ of CN203
Specified Value	4.97 ± 0.15 Vdc
SS5V check	
Measurement Point	Pins ⑮ and ⑱ of CN203
Specified Value	4.87 ± 0.15 Vdc
M5V (2) check	
Measurement Point	Pins ⑩, ⑪ and ⑫ of CN203
Specified Value	5.03 ± 0.15 Vdc
VID 5V check	
Measurement Point	Pins ②⑤ and ②⑥ of CN203
Specified Value	4.92 ± 0.02 Vdc
AU 5V check	
Measurement Point	Pins ⑰ and ⑳ of CN203
Specified Value	4.89 ± 0.15 Vdc
DIG 5V check	
Measurement Point	Pins ⑨ and ⑩ of CN202
Specified Value	$4.85^{+1.15}_{-0.05}$ Vdc
CAM 5V check	
Measurement Point	Pins ①, ③ and ⑥ of CN202
Specified Value	4.90 ± 0.05 Vdc
CAM 15V check	
Measurement Point	Pin ② of CN202
Specified Value	15.00 ± 0.15 Vdc
CAM -9V check	
Measurement Point	Pin ④ of CN202
Specified Value	-8.40 ± 0.40 Vdc
M5V check	
Measurement Point	Pins ⑭ and ⑮ of CN202
Specified Value	4.98 ± 0.15 Vdc

10-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to "Page D address list" in "10-1-10. Service Mode".

Mode	E-E
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00 to AF

Input method:

- 1) Release the write protect.
Page: 1, address: 00, data: 01
- 2) Select page D, and input the initial value to each address.
(After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote control unit before changing the address.)

2. Battery End Adjustment

Mode	E-E
Signal	Arbitrary
Measurement Point	LCD display of the adjusting remote control unit
Measuring Instrument	
Adjustment Page	D
Specified Value	03 (BATT END)

Connection:

- 1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 10-6.

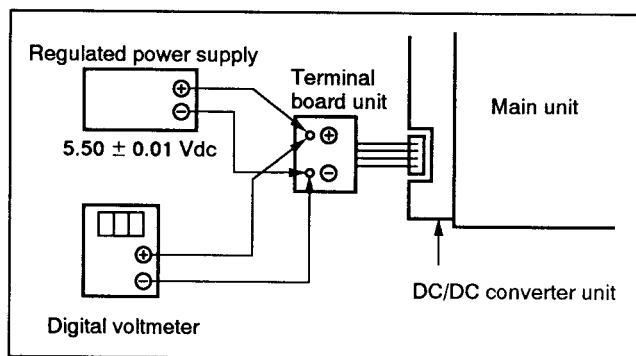


Fig. 10-6.

Adjusting method:

- 1) Adjust the regulated power supply output voltage so that the digital voltmeter display is 6.3 ± 0.1 Vdc.
- 2) Release the protect.
Page: 1, address: 00, data: 01
- 3) Set data: 01 to page: D, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Test mode 1 setting)
- 4) Decrease the voltage so that the digital voltmeter display is 5.50 ± 0.01 Vdc.
- 5) Select page: 4, address: 10, read the adjusting remote control unit display data, and take it as D03.
- 6) Set data D03 to page: D, address: 03, and press the PAUSE button of the adjusting remote control unit.
- 7) Convert D03 to decimal to obtain D03'. (Refer to Table 8-7. "Hexadecimal notation - decimal notation conversion table")
- 8) Obtain the adjustment data (decimal) by following formula (decimal notation calculation), convert to hexadecimal and enter the data into each adjustment address.

Address: 2D	$D2D' = D03' + 14$
Address: 2E	$D2E' = D03' + 10$
Address: 2F	$D2F' = D03' + 5$
- Note:** After setting the data, be sure to press the PAUSE button of the adjusting remote control unit before changing the address.
- 9) Set data: 00 to page: D, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Test mode 1 release)
- 10) Turn off the power supply.
- 11) Perform "Battery Down Check".

3. Battery Down Check

Mode	Camera record
Subject	Arbitrary

Connection

- 1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 10-6.

Checking method:

Remove the adjusting remote control unit, and perform the following check. If the check is not satisfied, perform from the beginning again.

- 1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 6.3 ± 0.1 Vdc.
- 2) Set to the camera recording mode.
- 3) Decrease the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.65 ± 0.01 Vdc.
- 4) Check that the $\square$ mark on the EVF (viewfinder) display is not lighted up. (TALLY lamp lights up).
- 5) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.53 ± 0.01 Vdc.
- 6) Check that the $\square$ mark and the TALLY lamp on the EVF display on the EVF display blinks every second.
- 7) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.47 ± 0.01 Vdc.
- 8) Check that the $\square$ mark and the TALLY lamp on the EVF display are blinking faster, the VTR stops and the power supply turns off.

10-4. SERVO SYSTEM ADJUSTMENTS

1. Switching Position Adjustment (FP-484 board)

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1CP)
Measurement Point	CH1: Pin ⑨ of CN002 (RF SWP) CH2: Pin ⑫ of CN002 (PB RF CH2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	04 (SW POSITION) (LOW) 05 (SW POSITION) (HIGH)
Specified Value	$t_1 = 0 \pm 5 \mu\text{sec}$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Set data: 80 to page: D, address: 05.
- 3) Change the data of page: D, address: 05 (For coarse adjustments) and address: 04 (For fine adjustments), and adjust so that the switching position (t_1) becomes the specified value.

Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the address. If not, the new data will not be written in the memory.

- 4) Press the PAUSE button of the adjusting remote control unit.

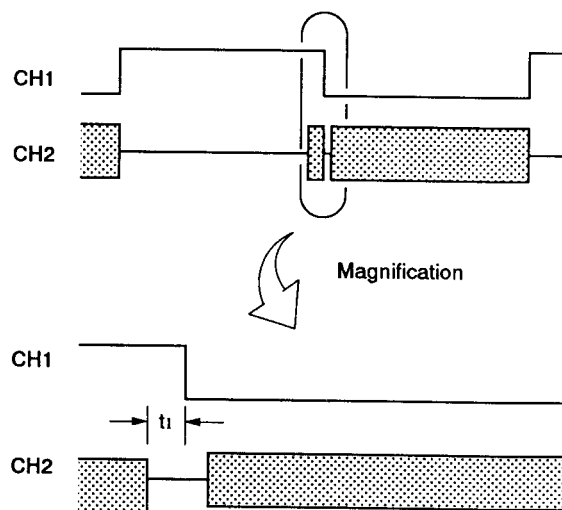


Fig. 10-7.

2. CAP FG Duty Adjustment (FP-484 board)

Mode	Record (SP)
Signal	Color bar
Measurement Point	Pin ④ of CN002 (CAP FG)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	38 (CAP FG BIAS)
Specified Value	Duty=50 ± 1%

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Set data: 80 to page: D, address: 38.
- 3) Change the data of page: D, address: 38, and adjust the duty of the CFG waveform to the specified value.
- 4) Press the PAUSE button of the adjusting remote control unit.

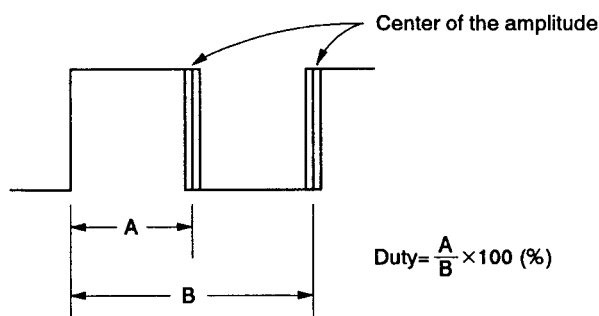


Fig. 10-8.

10-5. VIDEO ADJUSTMENTS

The adjustments of the video system must be performed according to the following adjustment procedure.

The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Figs. 10-3. and 10-4.

Use a ME tape unless specified otherwise. Check that the Hi8 switch is at "Auto".

[Adjusting procedure]

- 1) Playback frequency characteristics adjustment
- 2) Flying erase check
- 3) VXO oscillation frequency check
- 4) SYNC AGC level adjustment
- 5) IR adjustment
- 6) Chroma comb filter adjustment
- 7) Emphasis input level adjustment
- 8) PB Y level adjustment
- 9) PB LINE OUT level adjustment
- 10) Normal mode Y FM carrier frequency adjustment
- 11) Normal mode Y FM deviation adjustment
- 12) Hi8 mode Y FM carrier frequency adjustment
- 13) Hi8 mode Y FM deviation adjustment
- 14) Chroma emphasis fo adjustment
- 15) REC C RF level adjustment
- 16) REC Y level adjustment
- 17) REC L CONT adjustment
- 18) REC C preset adjustment
- 19) REC ATF level check
- 20) Chroma flicker check and adjustment
- 21) REC AFM level check
- 22) YD adjustment

1. Playback Frequency Characteristics Adjustment (FP-484 board)

Mode	Playback
Signal	Alignment tape: For Hi8 mode frequency characteristics adjustment (WR5-7CE)
Measurement Point	Refer to Fig. 10-9.
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	42 (MT 1A (E)), 44 (MT 1B (E)), 3E (MT 2A (E)), 40 (MT 2B (E)), 43 (MT 1A (L)), 45 (MT 1B (L)), 3F (MT 2A (L)), 41 (MT 2B (L))
Specified Value	4.5 MHz level: 7.0 MHz level= 4: (3.0 ± 0.2)

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of each address of page D, and adjust the level ratio of 4.5 MHz and 7.0 MHz of each PB RF output waveform of 1a, 1b, 2a, 2b to the specified value.

Note: After each address adjustment, be sure to press the PAUSE button of the adjusting remote control unit and memorize the data.

- 3) Set data to address: 43, 45, 3F, 41 of Page: D as shown in the following table.
(Be sure to press the PAUSE button of the adjusting remote control unit after setting each data.)

Address	Data
43	Same data as address: 42
45	Same data as address: 44
3F	Same data as address: 3E
41	Same data as address: 40

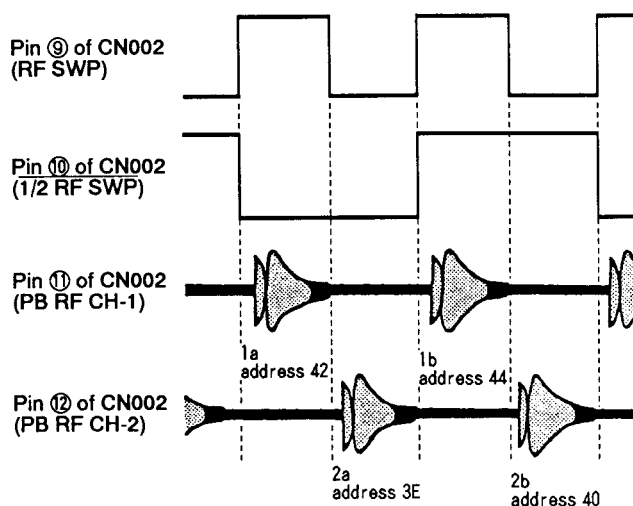


Fig. 10-9.

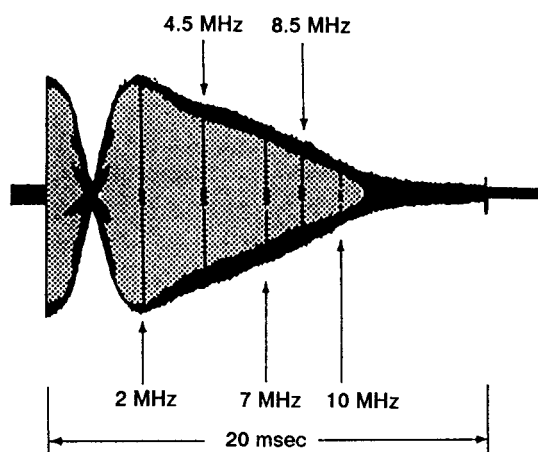


Fig. 10-10.

2. Flying Erase Check (VS-101 board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ⑮ of CN001 (FE (X)) (JL001)
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: Above 7.5 MHz Voltage: Above 6.0 Vp-p

Note: Use a ME type tape.

Checking method:

- 1) Check that the oscillation frequency is above 7.5 MHz and that the oscillation voltage is above 6.0 Vp-p.

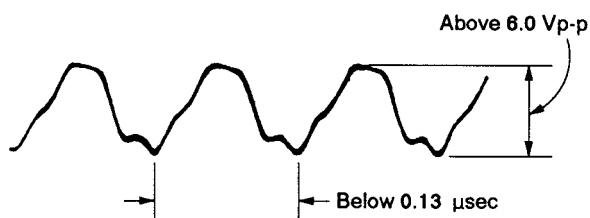


Fig. 10-11.

3. VXO Oscillation Frequency Check (VS-101 board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑫ of IC501
Measuring Instrument	Frequency counter
Specified Value	4433618 ± 100 Hz

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

Adjusting method:

- 1) Check that the oscillation frequency of pin ⑫ of IC501 is 4433618 ± 100 Hz.



(4433618 ± 100 Hz)

Fig. 10-12.

4. SYNC AGC Level Adjustment (VS-101 board)

Mode	Record
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑳ of IC401 (EE PB Y) (JL303)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4A (SYNC AGC)
Specified Value	A=0.5 ± 0.01V

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 4A, and adjust so that the Y signal level (A) becomes the specified value.
- 3) Press the PAUSE button of the adjusting remote control unit.

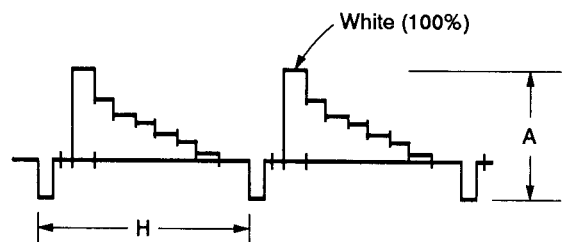


Fig. 10-13.

5. IR Adjustment (VS-101 board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement Point	Pin ⑦ of IC401 (Y COMB OUT) (JL438)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4D (SR IR)
Specified Value	Residual chroma component (A) is minimum (below 50 mVp-p)

Connection

- 1) Connect pin ⑭ of IC401 (or pin ② of IC402) to pin ⑤ of IC401 with a jumper wire.

Adjusting method:

- 1) Check that the input is "VIDEO".
- 2) Release the protect.
Page: 1, address: 00, data: 01
- 3) Change the data of page: D, address: 4D, and adjust so that the residual chroma component (A) becomes minimum.
- 4) Press the PAUSE button of the adjusting remote control unit.

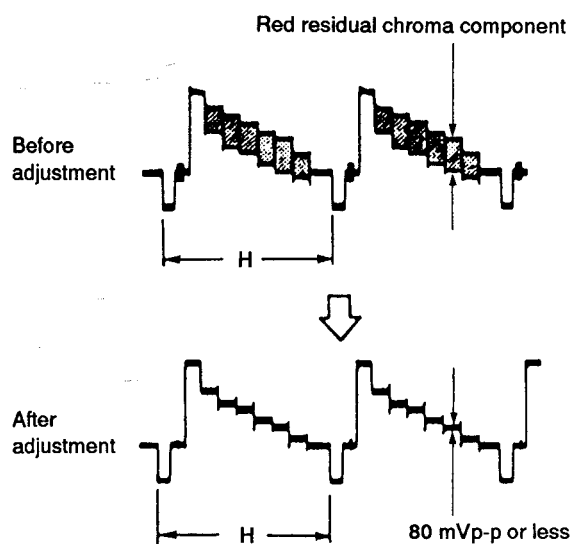


Fig. 10-14.

6. Chroma Comb Filter Adjustment (VS-101 board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement Point	Pin ⑩ of IC401 (C+CD) (JL437)
Adjusting Element	Oscilloscope
Measuring Instrument	RV551 (Phase)
Adjustment Page	D
Adjustment Address	4C (C COMB)
Specified Value	Residual chroma component (A) is minimum.

Adjusting method:

- 1) Check that the input is "VIDEO".
- 2) Release the protect.
Page: 1, address: 00, data: 01
- 3) Change the data of page: D, address: 4C, and adjust the residual chroma component to minimum.
- 4) Adjust RV551 so that the residual chroma component (A) becomes minimum.
- 5) Repeat 3) and 4) until the specified value is satisfied.
- 6) Press the PAUSE button of the adjusting remote control unit.

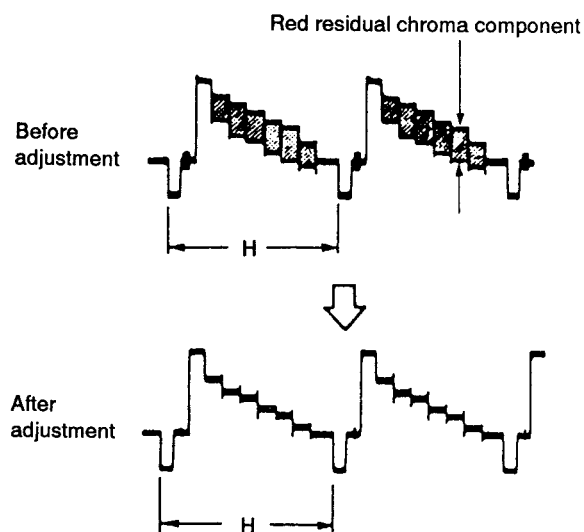


Fig. 10-15.

7. Emphasis Input Level Adjustment (VS-101 board)

Mode	Record
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑤ of IC403 (or Pin ③ of IC401) (JL447)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5A (EMP LEVEL)
Specified Value	$A=0.50 \pm 0.025V$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 5A, and adjust so that the Y signal level (A) becomes the specified value.
- 3) Press the PAUSE button of the adjusting remote control unit.

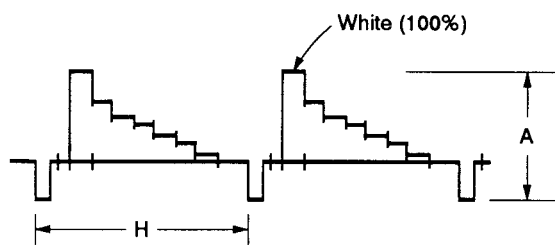


Fig. 10-16.

8. PB Y Level Adjustment (VS-101 board)

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section • Normal mode WR5-5CSP • Hi8 mode WR5-8CSE
Measurement Point	Pin ⑩ of IC401 (JL435)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	• Normal mode 59 (PB YL) • Hi8 mode 58 (PB YE)
Specified Value	$A=0.50 \pm 0.025V$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Playback the color bar section of the normal mode alignment tape (WR5-5CSP).
- 3) Change the data of page: D, address: 59, and adjust so that the Y signal level (A) becomes the specified value.
- 4) Press the PAUSE button of the adjusting remote control unit.
- 5) Playback the color bar section of the Hi8 mode alignment tape (WR5-8CSE).
- 6) Change the data of page: D, address: 58, and adjust so that the Y signal level (A) becomes the specified value.
- 7) Press the PAUSE button of the adjusting remote control unit.

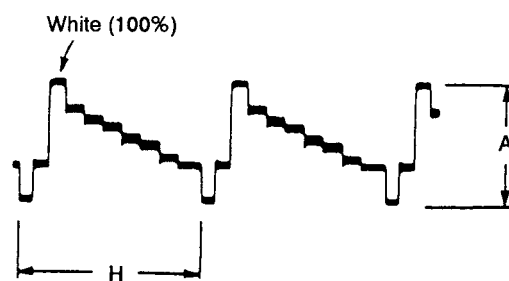


Fig. 10-17.

9. PB LINE OUT Level Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8CSP) Color bar section
Measurement Point	Pin ⑭ of W304 (S-Y I/O) (JL310)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5B (PB LINE LEVEL)
Specified Value	$A=1.0 \pm 0.025V$

Note 1: Insert the plug into the S VIDEO output terminal.
2: Terminate the Y signal terminal of the S VIDEO output terminal at 75Ω .

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 5B, and adjust so that the video signal level (A) becomes the specified value.
- 3) Press the PAUSE button of the adjusting remote control unit.

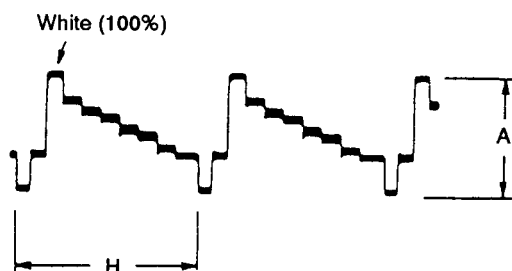


Fig. 10-18.

10. Normal Mode Y FM Carrier Frequency Adjustment (VS-101 board)

Mode	E-E
Signal	No signal
Measurement Point	Pin ④ of IC401 (Y RF OUT) (JL428)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	4F (CAR.-L)
Specified Value	$4.38 \pm 0.04 \text{ MHz}$

Adjusting method:

- 1) Insert a MP type tape.
- 2) Release the protect.
Page: 1, address: 00, data: 01
- 3) Change the data of page: D, address: 4F, and adjust so that the Y FM carrier frequency becomes the specified value.
- 4) Press the PAUSE button of the adjusting remote control unit.

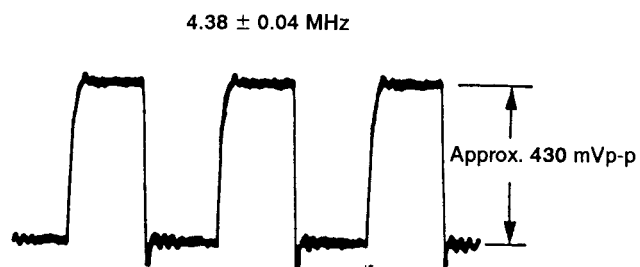


Fig. 10-19.

11. Normal Mode Y FM Deviation Adjustment (VS-101 board)

Mode	Record and playback
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑮ of IC401 (JL435)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	51 (DEV.-L)
Specified Value	$A=0.50 \pm 0.025V$

Note: Check that “Emphasis Input Level Adjustment”, and “PB Y Level Adjustment” have been completed.

Adjusting method:

- 1) Insert a MP type tape.
- 2) Release the protect.
Page: 1, address: 00, data: 01
- 3) Record the color bar signal.
- 4) Playback the recorded signal.
- 5) Check the playback signal level (A).
Specification: $A=0.50 \pm 0.01V$
- 6) If the specification is not satisfied, change the data of page: D, address: 51, and repeat steps 3) to 5).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

- 7) Press the PAUSE button of the adjusting remote control unit.
- 8) Perform “Normal Mode Y FM Carrier Frequency Adjustment”.

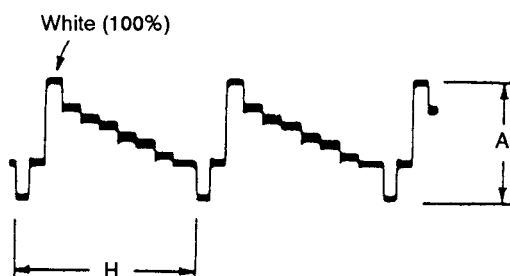


Fig. 10-20.

12. Hi8 Mode Y FM Carrier Frequency Adjustment (VS-101 board)

Mode	E-E
Signal	Non signal
Measurement Point	Pin ④ of IC401 (Y RF OUT) (JL428)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	4E (CAR.-E)
Specified Value	$6.00 \pm 0.04 \text{ MHz}$

Adjusting method:

- 1) Insert a ME type tape, and check that the “Hi8” switch is at “Auto”.
- 2) Release the protect.
Page: 1, address: 00, data: 01
- 3) Change the data of page: D, address: 4E, and adjust so that the Y FM carrier frequency becomes the specified value.
- 4) Press the PAUSE button of the adjusting remote control unit.

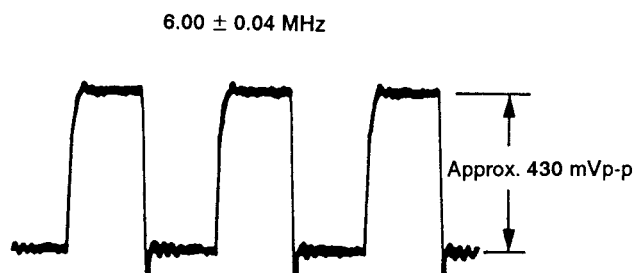


Fig. 10-21.

13. Hi8 Mode Y FM Deviation Adjustment (VS-101 board)

Mode	Record and playback
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑮ of IC401 (JL435)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	50 (DEV.-E)
Specified Value	$A=0.50 \pm 0.025V$

Note: Check that "Emphasis Input Level Adjustment" and "PB Y Level Adjustment" have been completed.

Adjusting method:

- 1) Insert a ME type tape, and check that the "Hi8" switch is at "Auto".
- 2) Release the protect.
Page: 1, address: 00, data: 01
- 3) Record the color bar signal.
- 4) Playback the recorded signal.
- 5) Check the playback signal level (A).
Specification: $A=0.50 \pm 0.01V$
- 6) If the specification is not satisfied, change the data of page: D, address: 50, and repeat steps 3) to 5).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

- 7) Press the PAUSE button of the adjusting remote control unit.
- 8) Perform "Hi8 Mode Y FM Carrier Frequency Adjustment".

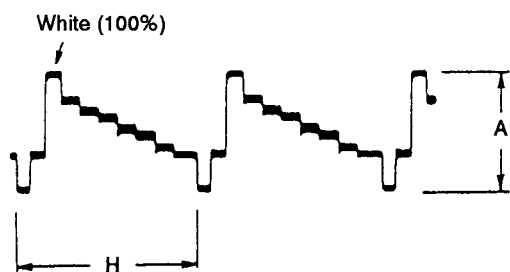


Fig. 10-22.

14. Chroma Emphasis f₀ Adjustment (VS-101 board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement Point	Pin ② of IC501 (JL504)
Measuring Instrument	Oscilloscope
Adjustment Element	FL502
Specified Value	Minimum f ₀ component

Adjusting method

- 1) Adjust FL502 so that the amplitude of the latter section of the chroma signal (yellow section) becomes minimum.

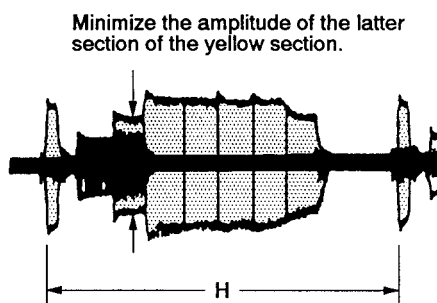


Fig. 10-23.

15. REC C RF Level Adjustment (VS-101 board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement Point	Pin ③ of IC503 (REC C RF) (JL427)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	46 (REC C RF)
Specified Value	$A=66.4 \pm 5 \text{ mVp-p}$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 46, and adjust so that the amplitude (A) of the flat part of the chroma signal (red) becomes the specified value.
- 3) Press the PAUSE button of the adjusting remote control unit.

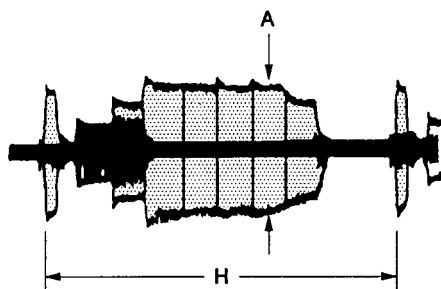


Fig. 10-24.

16. REC Y Level Adjustment (FP-484 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑦ of CN002 (REC 1a)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	52 (REC Y CONT (ME E)) 53 (REC Y CONT (MP E)) 54 (REC Y CONT (ME L)) 55 (REC Y CONT (MP L))
Specified Value	$A=300 \pm 5 \text{ mVp-p}$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- ME tape Hi8 mode (ME E mode) adjustment
- 2) Insert the ME tape, and set the record mode.
- 3) Check that the Hi8 switch is at "Auto".
- 4) Change the data of page: D, address: 52, and adjust so that REC Y level (A) becomes the specified value.
- 5) Press the PAUSE button of the adjusting remote control unit.
- Hi8 MP tape Hi8 mode (MP E mode) adjustment
- 6) Insert the Hi8 MP tape, and set the record mode.
- 7) Check that the Hi8 switch is at "Auto".
- 8) Change the data of page: D, address: 53, and adjust so that the REC Y level (A) becomes the specified value.
- 9) Press the PAUSE button of the adjusting remote control unit.
- ME tape normal mode (ME L mode) adjustment
- 10) Turn the Hi8 switch off.
- 11) Insert the ME tape, and set the record mode.
- 12) Change the data of page: D, address: 54, and adjust so that the REC Y level (A) becomes the specified value.
- 13) Press the PAUSE button of the adjusting remote control unit.
- 14) Set the Hi8 switch to "Auto".
- MP tape normal mode (MP L mode) adjustment
- 15) Insert the MP tape, and set the record mode.
- 16) Change the data of page: D, address: 55, and adjust so that the REC Y level (A) becomes the specified value.
- 17) Press the PAUSE button of the adjusting remote control unit.

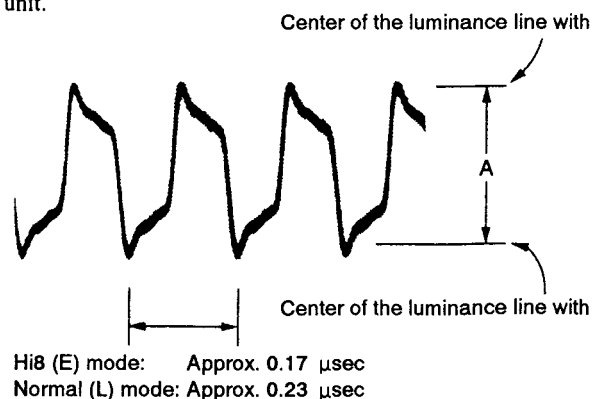


Fig. 10-25.

17. REC L CONT Adjustment (FP-484 board)

Mode	Record (SP)
Signal	Color bar
Measurement Point	Pin ⑦ of CN002 (REC 1a)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5C (REC L CONT (ME E SP)) 5D (REC L CONT (MP E SP)) 5E (REC L CONT (ME L SP)) 5F (REC L CONT (MP L SP)) 60 (REC L CONT (ME E LP)) 61 (REC L CONT (MP E LP)) 62 (REC L CONT (ME L LP)) 63 (REC L CONT (MP L LP))
Specified Value	ME tape Hi8 mode (ME E) $A=57 \pm 2$ mVp-p Hi8 MP tape Hi8 mode (MP E) $A=38 \pm 2$ mVp-p ME tape normal mode (ME L) $A=57 \pm 2$ mVp-p MP tape normal mode (MP L) $A=48 \pm 2$ mVp-p

Note: Check that the REC MODE switch is at "SP".

Connection

- 1) Remove the AU-151 board CN603.
- 2) Connect the contact point of R178 and R176 of the VS-101 board (near pin ⑤ of IC153) to the GND with a 0.01 μ F capacitor (1-101-004-00).

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) After memorizing each data of address: 52 to address: 55 of page: D, set data: 00 to each address.
(Minimizing the REC Y RF level)
- ME tape Hi8 mode (ME E mode) adjustment
- 3) Insert the ME tape, and set the record mode.
- 4) Check that the Hi8 switch is at "Auto".
- 5) Change the data of page: D, address: 5C, and adjust so that REC C RF level (A) becomes the specified value.
- 6) Press the PAUSE button of the adjusting remote control unit.
- Hi8 MP tape Hi8 mode (MP E mode) adjustment
- 7) Insert the Hi8 MP tape, and set the record mode.
- 8) Check that the Hi8 switch is at "Auto".
- 9) Change the data of page: D, address: 5D, and adjust so that the REC C RF level (A) becomes the specified value.
- 10) Press the PAUSE button of the adjusting remote control unit.

- ME tape normal mode (ME L mode) adjustment

- 11) Turn the Hi8 switch off.
- 12) Insert the ME tape, and set the record mode.
- 13) Change the data of page: D, address: 5E, and adjust so that the REC C RF level (A) becomes the specified value.
- 14) Press the PAUSE button of the adjusting remote control unit.
- 15) Set the Hi8 switch to "Auto".
- MP tape normal mode (MP L mode) adjustment
- 16) Insert the MP tape, and set the record mode.
- 17) Change the data of page: D, address: 5F, and adjust so that the REC C RF level (A) becomes the specified value.
- 18) Press the PAUSE button of the adjusting remote control unit.
- 19) Set data to address: 60, 61, 62, 63 of page: D as shown in the following table.
(Be sure to press the PAUSE button of the adjusting remote control unit after setting each data.)

Address	Data
60	Same data as address: 5C
61	Same data as address: 5D
62	Same data as address: 5E
63	Same data as address: 5F

- Processing after adjustments

- 20) Set the data memorized at step 2) to each address from address: 52 to address: 55 of page: D. and press the PAUSE button of the adjusting remote control unit.

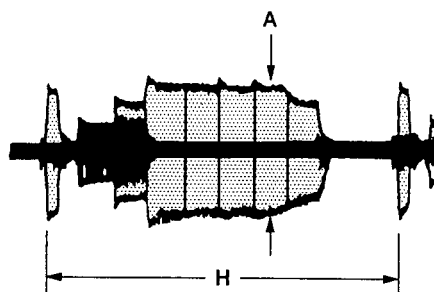


Fig. 10-26.

18. REC C Preset Adjustment (FP-484 board)

Mode	Record (SP)
Signal	Color bar
Measurement Point	CH1 (1:1 probe) CH1a: Pin ⑦ of CN002 CH2a: Pin ⑧ of CN002 CH1b: Pin ⑤ of CN002 CH2b: Pin ⑥ of CN002 CH2 (10: 1 probe) Video input/output terminal
Measuring Instrument	Oscilloscope TRIGGER SOURCE: CH2
Adjustment Page	D
Adjustment Address	30 (REC C 1A (ME)), 31 (REC C 1A (MP)), 32 (REC C 1B (ME)), 33 (REC C 1B (MP)), 34 (REC C 2A (ME)), 35 (REC C 2A (MP)), 36 (REC C 2B (ME)), 37 (REC C 2B (MP))
Specified Value	A=57 ± 2 mVp-p

Note 1: Use a ME type tape, and check that the “Hi8” switch is at “Auto”.

2: Check that the REC MODE switch is at “SP”.

Connection:

- 1) Remove the AU-151 board CN603.
- 2) Connect the contact point of R178 and R176 of the VS-101 board (near pin ⑥ of IC153) to GND with a 0.01 μ F capacitor (1-101-004-00).

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) After memorizing the data of page: D, address: 52, set data: 00. (Minimizing the REC Y RF level)
- 3) Connect CH1 probe of the oscilloscope to pin ⑦ of CN002 (REC 1a).
- 4) Change the data of page: D, address: 30, and adjust so that the CH1a REC C level (A) becomes the specified value.
- 5) Press the PAUSE button of the adjusting remote control unit.
- 6) Adjust each REC C LEVEL of CH2a (address: 34), CH1b (address: 32) and CH2b (address: 36) in the same way.

- 7) Set data to address: 31, 33, 35, 37 of page: D as shown in the following table. (Be sure to press the PAUSE button of the adjusting remote control unit after setting each data.)

Address	Data
31	Same data as address: 30
33	Same data as address: 32
35	Same data as address: 34
37	Same data as address: 36

- 8) Set the data memorized at step 2) to page: D, address: 52, and press the PAUSE button of the adjusting remote control unit.

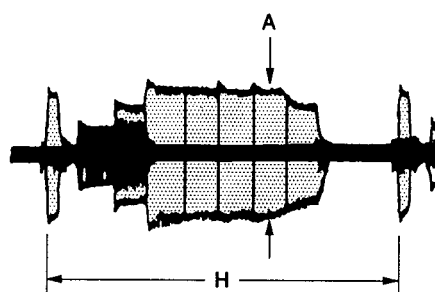


Fig. 10-27.

19. REC ATF Level Check (FP-484 board)

Mode	Record (SP)
Signal	No signal
Measurement Point	CH1a: (CN002 ⑦), CH2a: (CN002 ⑧), CH1b: (CN002 ⑤), CH2b: (CN002 ⑥)
Measuring Instrument	Oscilloscope
Specified Value	A=15.0 ± 2.0 mVp-p

Note 1: Use a MP type tape, and check that the “Hi8” switch is at “Auto”.

2: Check that the REC MODE switch is at “SP”.

Connection:

- 1) Remove the AU-151 board CN603.

Checking method:

- 1) Release the protect.
Page: 1, address: 00, data: 01.
- 2) After memorizing the data of page: D, address: 55, set data: 00. (Minimizing the REC Y RF level)
- 3) Check that the REC ATF signal level (A) satisfies the specified value for each channel from CH1a to CH2a.
- 4) Set the data memorized at step 2) to page: D, address: 55, and press the PAUSE button of the adjusting remote control unit.

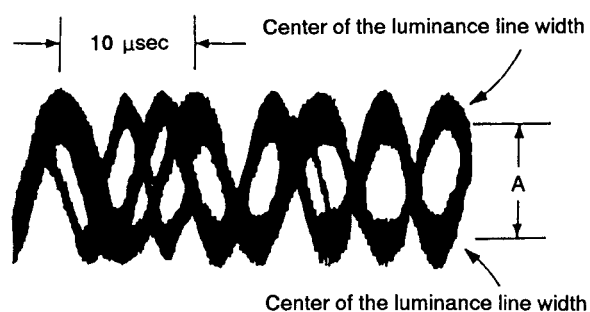


Fig. 10-28.

20. Chroma Flicker Check and Adjustment (VS-101 board)

Mode	Self recording/playback (LP)
Signal	Color bar
Measurement Point	CH-1 (1: 1 probe): Pin ④ of IC501 of VS-101 board (PBC RF IN) CH-2 (10: 1 probe): Pin ⑩ of CN002 of FP-484 board (1/2 RF SWP)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment address	30 (REC C 1A (ME)), 31 (REC C 1A (MP)), 32 (REC C 1B (ME)), 33 (REC C 1B (MP)), 34 (REC C 2A (ME)), 35 (REC C 2A (MP)), 36 (REC C 2B (ME)), 37 (REC C 2B (MP))
Specified Value	$\frac{V_{c1a}}{V_{c1b}} \times 100 = 100^{+18}_{-16} (\%)$ $\frac{V_{c2a}}{V_{c2b}} \times 100 = 100^{+18}_{-16} (\%)$

Note 1: Check that “REC C Preset Adjustment”, and “REC ATF Level Check” have been completed.

2: Use a ME type tape and check that the “Hi8” switch is at “Auto”.

Checking method:

- 1) Record the color bar signal.
- 2) Playback the recorded section.
- 3) Name each playback level of channels 1a, 1b, 2a, 2b to V_{c1a} , V_{c1b} , V_{c2a} , V_{c2b} respectively.
- 4) Check that the specified values have been satisfied. If not, perform the following adjustments.

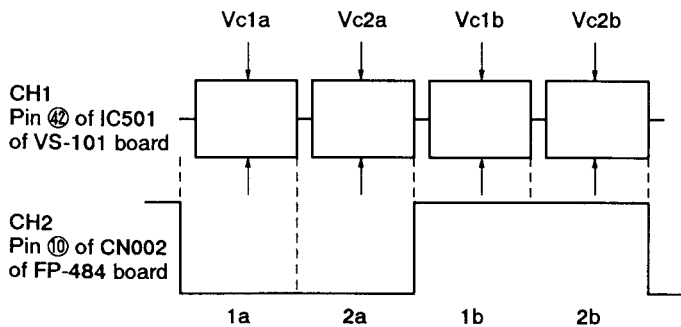


Fig. 10-29.

Adjusting method:

- 1) If the specifications are not satisfied, calculate the following values from the measuring values.

$$\Delta V_{c1} = |V_{c1a} - V_{c1b}| / 2$$

$$\Delta V_{c2} = |V_{c2a} - V_{c2b}| / 2$$

Note: | | is the absolute value.

- 2) The smaller value when the playback levels are V_{c1a} , V_{c1b} is

$$\left\{ \frac{(\text{The smaller value of } V_{c1a} \text{ and } V_{c1b}) + \Delta V_{c1}}{(\text{The smaller value of } V_{c1a} \text{ and } V_{c1b})} \right\} \times 57 \text{ (mVp-p)}$$

The greater value when the playback values are V_{c1a} , V_{c1b} is

$$\left\{ \frac{(\text{The greater value of } V_{c1a} \text{ and } V_{c1b}) - \Delta V_{c1}}{(\text{The greater value of } V_{c1a} \text{ and } V_{c1b})} \right\} \times 57 \text{ (mVp-p)}$$

The smaller value when the playback levels are V_{c2a} , V_{c2b} is

$$\left\{ \frac{(\text{The smaller value of } V_{c2a} \text{ and } V_{c2b}) + \Delta V_{c2}}{(\text{The smaller value of } V_{c2a} \text{ and } V_{c2b})} \right\} \times 57 \text{ (mVp-p)}$$

The greater value when the playback values are V_{c2a} , V_{c2b} is

$$\left\{ \frac{(\text{The greater value of } V_{c2a} \text{ and } V_{c2b}) - \Delta V_{c2}}{(\text{The greater value of } V_{c2a} \text{ and } V_{c2b})} \right\} \times 57 \text{ (mVp-p)}$$

- 3) Perform [REC C Preset Adjustment] with the value calculated from V_{c1a} , V_{c1b} , V_{c2a} , V_{c2b} at step 2), as the specified value for 1a, 1b, 2a, and 2b.
- 4) After the adjustment, perform “Chroma Flicker Check” again, and repeat the adjustment until the specified value is satisfied.

21. REC AFM Level Check (FP-484 board)

Mode	Record (SP)
Signal	No signal
Measurement Point	CH1a: (CN002 ⑦), CH2a: (CN002 ⑧), CH1b: (CN002 ⑤), CH2b: (CN002 ⑥)
Measuring Instrument	Oscilloscope
Specified Value	A=12.0 ± 2.5 mVp-p

Note 1: Use a MP type tape, and check that the “Hi8” switch is at “Auto”.

2: Do not insert anything into the audio input terminal (right). (Monaural record mode)

Connection:

- 1) Connect the contact point of R178 and R176 of the VS-101 board (near Pin ⑤ of IC153) to GND with a 0.01 μ F capacitor (1-101-004-00).

Checking method:

- 1) Release the protect.
Page: 1, address: 00, data: 01.
- 2) After memorizing the data of page: D, address: 55, set data: 00. (Minimizing the REC Y RF level)
- 3) Check that the REC AFM signal level (A) satisfies the specified value, for each channel from CH1a to CH2a.
- 4) Set the data memorized at step 2) to page: D, address: 55, and press the PAUSE button of the adjusting remote control unit.

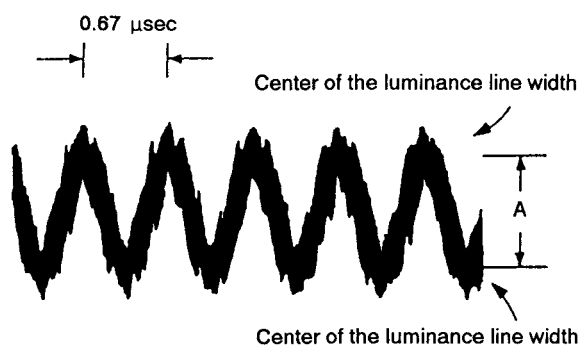


Fig. 10-30.

22. YD Adjustment (VS-101 board)

Mode	Playback
Signal	Color bar tape with dropout (Note 1)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	66 (YD ADJ)
Specified Value	Dropout section should be flat

Note 1: A tape with continuous dropout is made by scratching the magnetic section of a color bar tape which is running with the tip of a precision driver.

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 66, and flatten the dropout section.
- 3) Press the PAUSE button of the adjusting remote control unit.

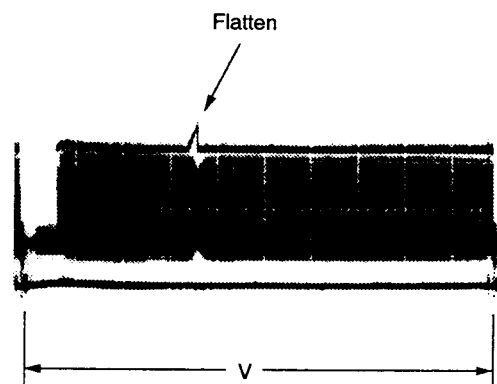


Fig. 10-31.

10-6. INDEX MARKER SYSTEM ADJUSTMENT

1. Playback VCO Free Oscillation Frequency Adjustment (VS-101 board)

Mode	Playback
Signal	Arbitrary tape
Measurement Point	Pin ⑧ of IC261
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	7F (INDEX VCO)
Specified Value	11.27 ± 0.05 MHz

Note: Connect the frequency counter via a high impedance and low capacity buffer amplifier (oscilloscope, etc.).

Connection:

- 1) Connect Pins ① and ⑥ of IC261 with a jumper wire.
- 2) Connect the Q264 collector and GND with a jumper wire.

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 7F, and adjust the oscillation frequency to the specified value.
- 3) Press the PAUSE button of the adjusting remote control unit.

2. REC PCM Level Check (VS-101 board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ② of IC001
Measuring Instrument	Oscilloscope
Specified Value	$A=250 \pm 100$ mVp-p

Checking method:

- 1) Check that the REC ATF level (A) satisfies the specified value.

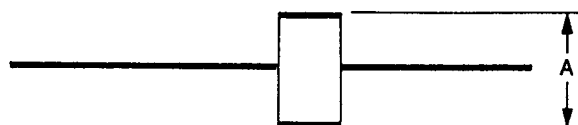
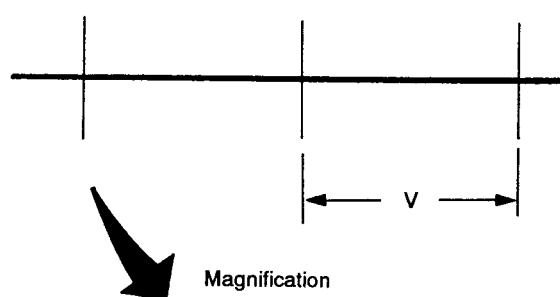


Fig. 10-32.

10-7. AUDIO SYSTEM ADJUSTMENT

- Perform the adjustment using the color bar signal as a video signal input.
- Unless specified otherwise, use a Hi8 ME tape.

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 10-33, and perform adjustments at the power switch [player] position. When inputting signal, connect Pin ⑦ (JACK OUT/IN) of JACK ASSY and GND with a jumper wire during Recording mode. Setting REC mode is described in section 10-1-5.

Set the Hi-Fi switch (CF-4 board S201) to the following position unless specified otherwise.

- Green (stereo) position

- Note:**
- 1) When inputting the audio signal, input the same signal to both L, and R channels, unless specified otherwise.
 - 2) Be sure to insert the plug (shorting plug or dummy plug, etc.) into the audio input/output terminal (right). If the plug is not inserted, the unit will be set into the monaural mode, and correct adjustments cannot be carried out.
(Monaural mode)
During recording · REC AFM RF1.7 MHz carrier will not be output.
During playback · The L+R signal will be output from the audio input/output terminal (left).
 - 3) The items to be adjusted for the R channel will be indicated within the [], in regard to the adjusting items to be adjusted for both L and R channels.

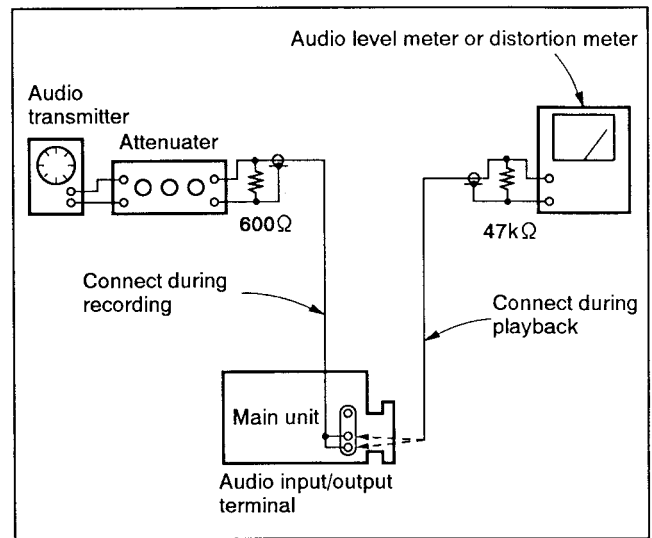


Fig. 10-33.

[Adjustment Procedure]

- 1) 1.5 MHz record level check
- 2) E-E output level check
- 3) REC matrix L-R adjustment
- 4) REC matrix L+R check
- 5) 1.5 MHz deviation adjustment
- 6) 1.7 MHz deviation adjustment
- 7) Overall level characteristics, distortion check
- 8) Separation check
- 9) Overall noise level check

1. 1.5 MHz Record Level Check (AU-151 board)

Mode	Record (Monaural)
Signal	No signal
Measurement Point	Pin ② of CN603 (REC AFM)
Measuring Instrument	Oscilloscope
Specified Value	$A=16 \pm 2$ mVp-p

Note: Do not insert the plug into the audio input terminal (right).

Checking method:

- 1) Check that the 1.5 MHz carrier level satisfies the specified value.
(Read the center of the luminance line width and note down the level read.)

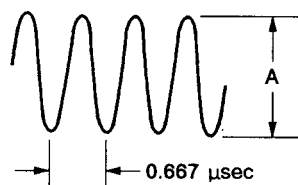


Fig. 10-34.

2. E-E Output Level Check (AU-151 board)

Mode	Record
Signal	400 Hz, -7.5 dBs audio input terminal left [right]
Measurement Point	Pin ④ of IC601 [Pin ⑤ of IC601]
Measuring Instrument	Oscilloscope
Specified Value	925^{+240}_{-190} mVp-p (-7.5 ± 2 dBs)

Checking method:

- 1) Check that the 400 Hz signal level satisfies the specified value.

3. REC Matrix L-R Adjustment (AU-151 board)

Mode	Record
Signal	400 Hz, -7.5 dBs Input to both left and right terminals of the audio input terminal
Measurement Point	Pin ⑤ of IC601
Measuring Instrument	Oscilloscope (Use 1:1 probe)
Adjustment Page	D
Adjustment Address	78 (REC/PB MX (REC))
Specified Value	0 ± 20 mVp-p

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 78, and minimize the 400 Hz signal level.
- 3) Press the PAUSE button of the adjusting remote control unit.

4. REC Matrix L+R Check (AU-151 board)

Mode	Record
Signal	1. 400 Hz, -7.5 dBs: Audio input terminal left No signal: Audio input terminal right 2. No signal: Audio input terminal left 400 Hz, -7.5 dBs: Audio input terminal right
Measurement Point	Pin ④ of IC601
Measuring Instrument	Oscilloscope
Specified Value	The level difference is 0 ± 40 mVp-p when only the left terminal is input and when only the right terminal is input.

Note: When measuring the signal level of pin ④ of IC601, wait for more than 1 minute after signal input before measuring. (To stabilize the AGC)

Adjusting method:

- 1) Input the 400 Hz, -7.5 dBs signal only to the audio input terminal (left). (Insert the shorting plug to the audio input terminal (right).)
- 2) Read the 400 Hz signal level of pin ④ of IC601, and take it down. (Approximately 400 mVp-p)
- 3) Input the 400 Hz, -7.5 dBs signal only to the audio input terminal (right). (Insert the shorting plug to the audio input terminal (left).)
- 4) Check that the 400 Hz signal level of pin ④ of IC601 is (the value that was taken down at step 2) ± 40 mVp-p.

5. 1.5 MHz Deviation Adjustment

Mode	Playback
Signal	Alignment tape: For checking the operation (WR5-5CSP)
Measurement Point	Audio output terminal left or right
Measuring Instrument	Oscilloscope, Level meter
Adjustment Page	D
Adjustment Address	7B (1.5 DEV)
Specified Value	-7.5 ± 0.5 dBs

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 7B, and adjust so that the 400 Hz signal level becomes the specified value.
- 3) Press the PAUSE button of the adjusting remote control unit.

6. 1.7 MHz Deviation Adjustment (AU-151 board)

Mode	Playback
Signal	Alignment tape: AFM stereo For checking operations (WR5-9CS) Bilingual (Monoscope) section
Measurement Point	1. Pin ④ of IC601 2. Pin ⑤ of IC601
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	7D (1.7 DEV)
Specified Value	8 ± 0.05 graduation

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Connect the oscilloscope to pin ④ of IC601.
- 3) Adjust the 400 Hz signal amplitude to the 8.0 graduation using the VOLT/DIV knob of the oscilloscope.
- 4) Connect the oscilloscope to pin ⑤ of IC601.
- 5) Change the data of page: D, address: 7D, and adjust so that the 1 kHz signal level becomes 8 ± 0.05 graduation. (Adjust with the center of the luminance line width.)
- 6) Press the PAUSE button of the adjusting remote control unit.

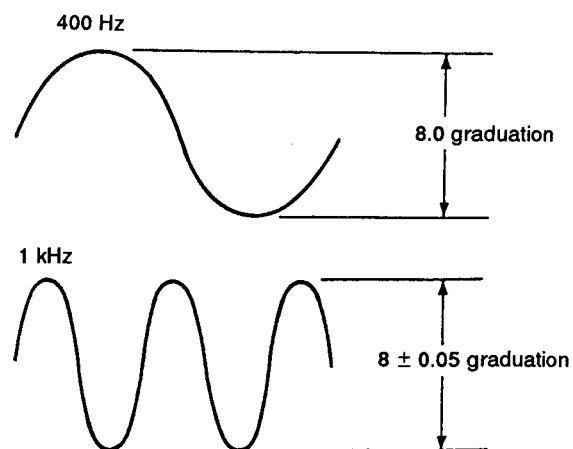


Fig. 10-35.

7. Overall Level Characteristics, Distortion Check

Mode	Self recording/playback
Signal	400 Hz, -7.5 dBs: Audio input terminal (left) [right] No signal: Audio input terminal (right) [left]
Measurement Point	Audio output terminal (left) [right]
Measuring Instrument	Audio level meter and distortion meter
Specified Value	Level: -7.5 ± 2 dBs Distortion rate: Below 0.8% (Note 2)

Note: 1) The [] indicates the measuring point during the right channel check.
2) Value when the 200 kHz to 6 kHz band-pass filter is used

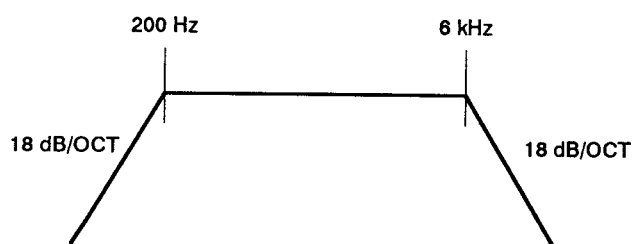


Fig. 10-36.

Checking method:

- 1) Input the 400 Hz, -7.5 dBs signal only to the audio input terminal (left) [right].

Note: Be sure to insert the shorting plug to the terminal that was not signal input.

- 2) Record the signal.
- 3) Remove the input signal.
- 4) Playback the recorded section.
- 5) Check that the 400 Hz signal level of the audio output terminal (left) [right] is -7.5 ± 2 dBs, and that the distortion rate is below 0.8% (Note 2).

8. Separation Check

Mode	Self recording /playback
Signal	No signal: Audio input terminal (left) [right] 400 Hz, -7.5 dBs: Audio input terminal (right) [left]
Measurement Point	Audio output terminal (left) [right]
Measuring Instrument	Audio level meter (Use an IHF-A curve auditory correction filter)
Specified Value	Below -27.5 dBs

Note: The [] indicates the measuring point during the right channel check.

Checking method:

- 1) Insert a shorting plug into the audio input terminal (left) [right], and input a 1kHz, -7.5 dBs signal only to the audio input terminal (right) [left].
- 2) Record the signal.
- 3) Remove the input signal.
- 4) Playback the recorded section.
- 5) Check that the cross talk level (1 kHz) of the audio output terminal (left) [right] is below -27.5 dBs.

9. Overall Noise Level Check

Mode	Self recording
Signal	No signal: Audio input terminal left and right
Measurement Point	Audio output terminal (left) [right]
Measuring Instrument	Audio level meter (Use an IHF-A curve auditory correction filter)
Specified Value	Below -62.5 dBs

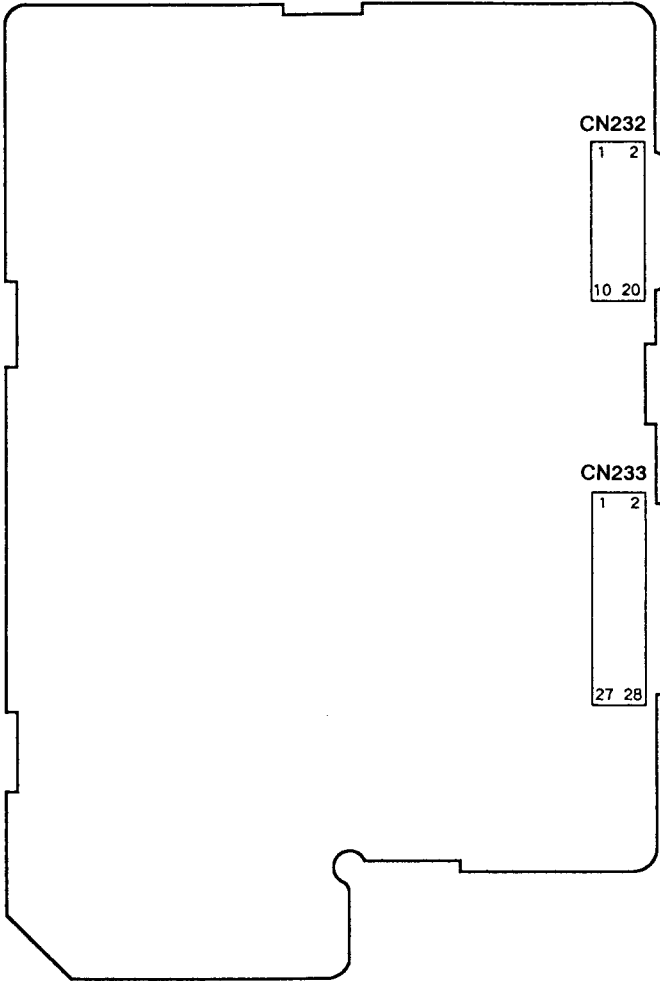
Note: The [] indicates the measuring point during the right channel check.

Checking method:

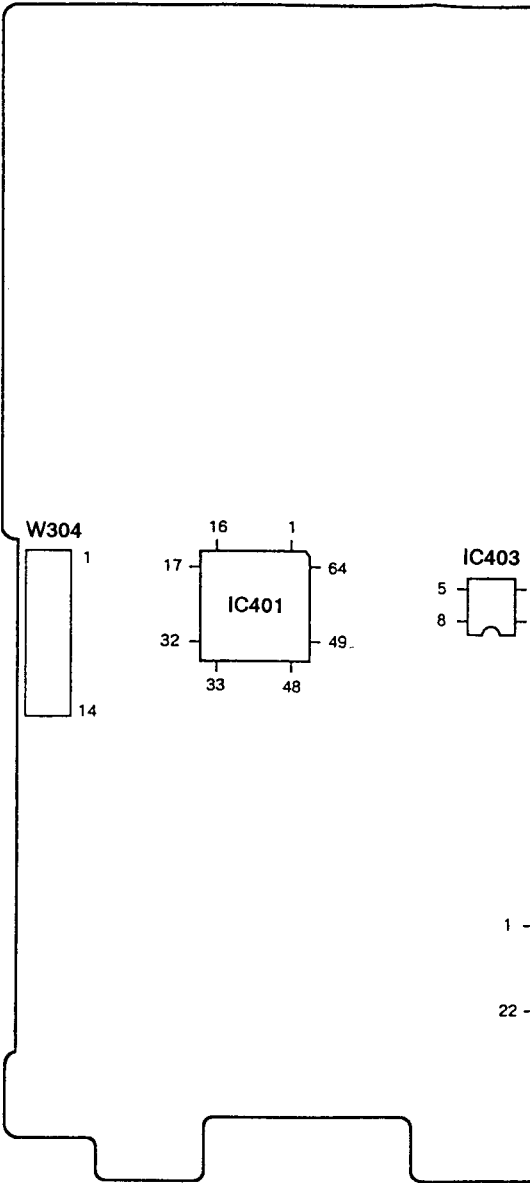
- 1) Insert the shorting plug to both left and right of the audio input terminals.
- 2) Record.
- 3) Remove the shorting plug.
- 4) Playback the recorded section.
- 5) Check that the noise level of the audio output terminal (left) [right] is below -62.5 dBs.

10-8. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

DD-58 BOARD (CONDUCTOR SIDE)

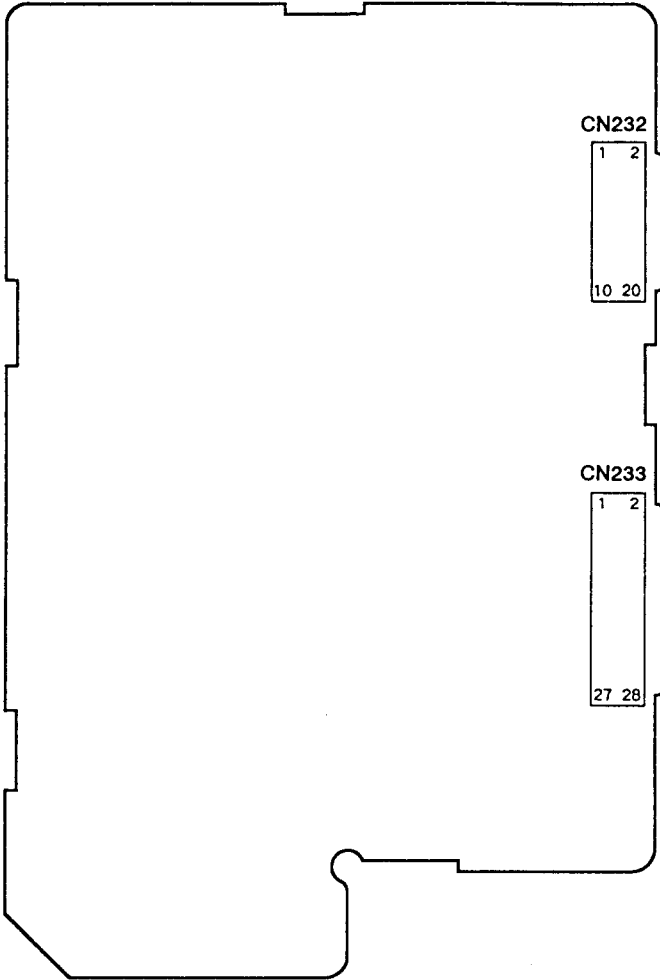


VS-101 BOARD (COMPONENT SIDE)

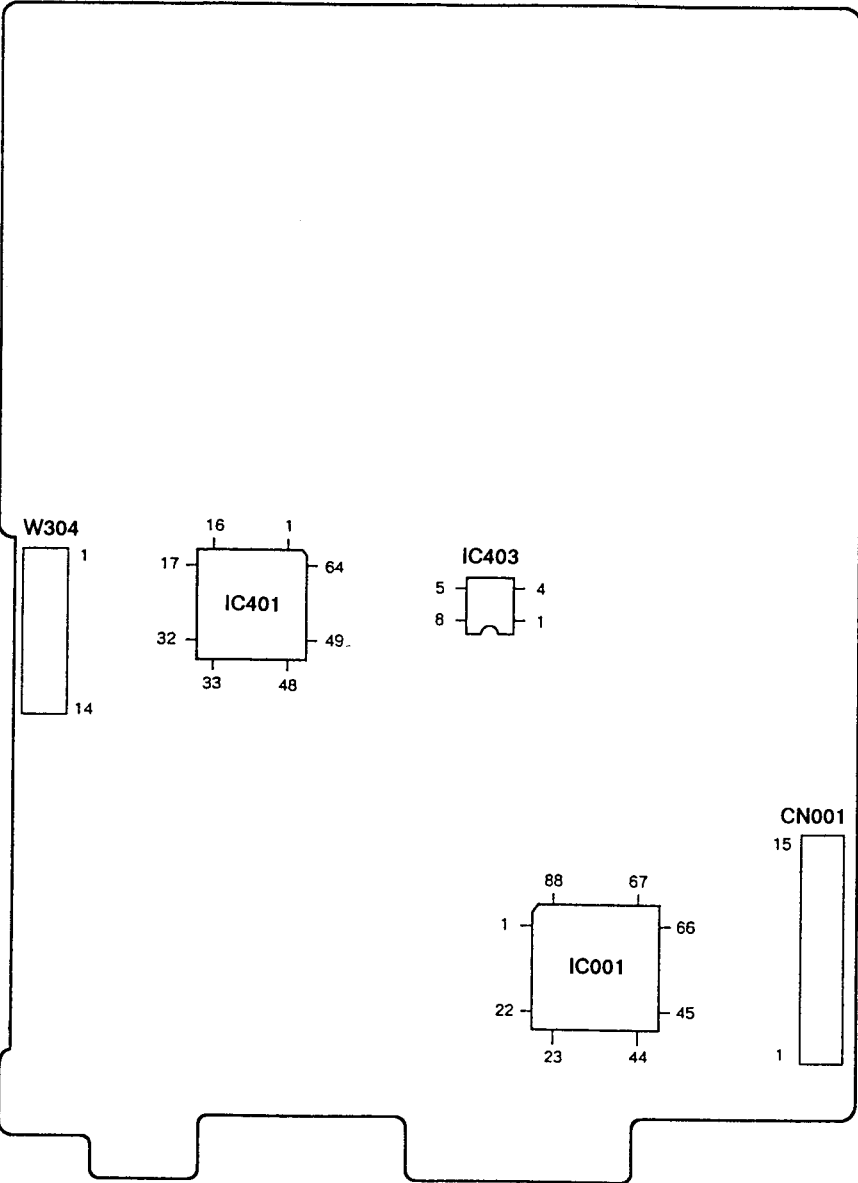


10-8. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

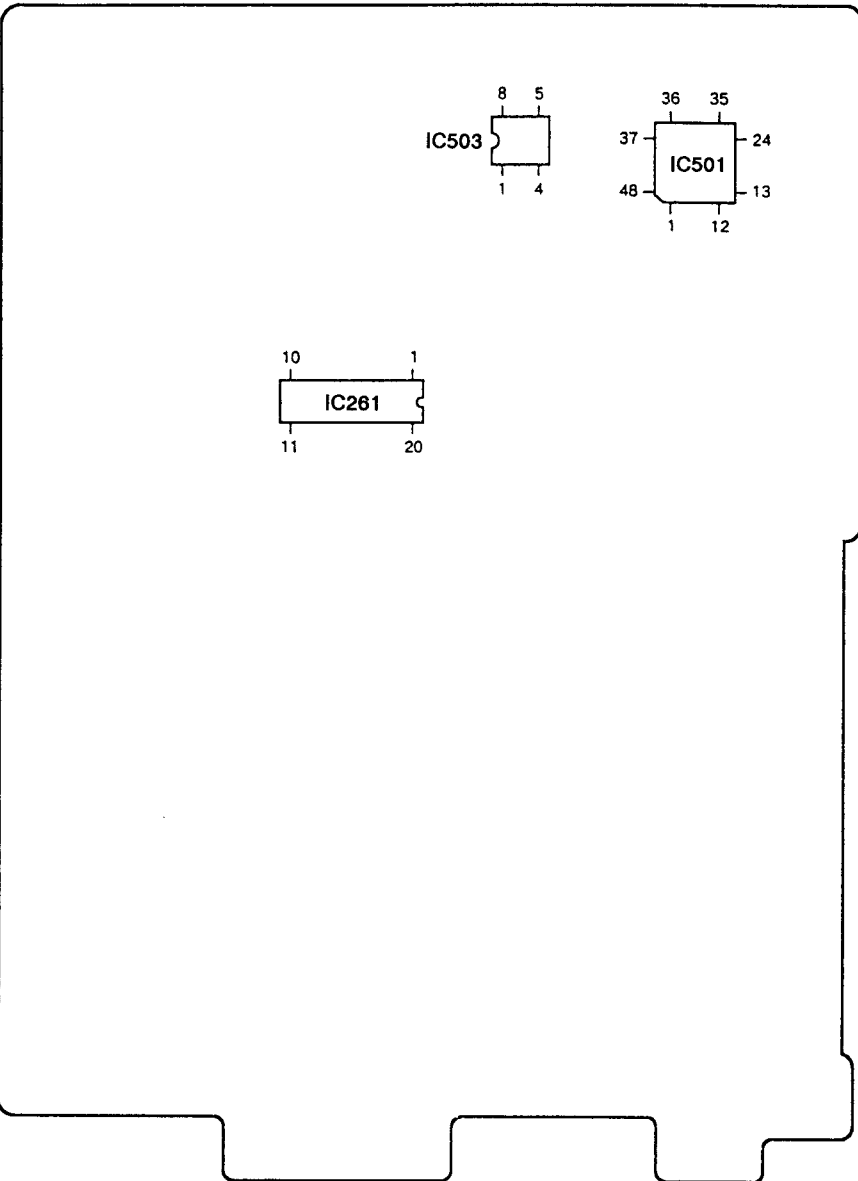
DD-58 BOARD (CONDUCTOR SIDE)



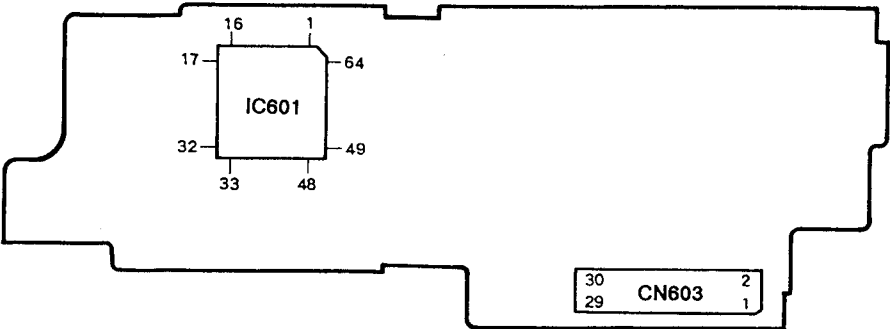
VS-101 BOARD (COMPONENT SIDE)



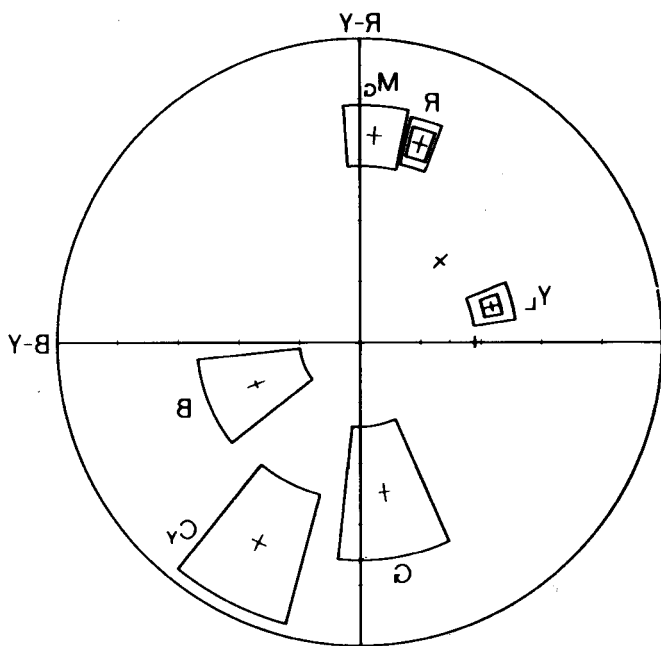
VS-101 BOARD (CONDUCTOR SIDE)



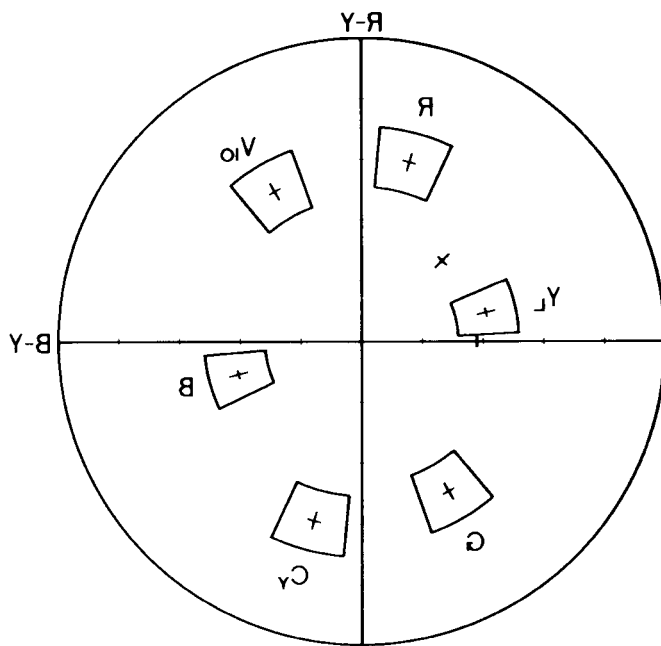
AU-151 BOARD (COMPONENT SIDE)



FOR CAMERA COLOR REPRODUCTION ADJUSTMENT



FOR TITLER COLOR REPRODUCTION ADJUSTMENT



CCD-TR808E

RMT-508

SONY SERVICE MANUAL

AEP Model

SUPPLEMENT-1

File this supplement with service manual.

Subject : Additional adjustment of steady-shot (VAP)

(96-026)

SECTION 8
CAMERA SECTION ADJUSTMENTS

 : ADD

The image correction adjustment for swinging must also be carried out if the angular velocity sensor has been replaced.

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 8 (2). Steady-shot (VAP) Adjustment

Subject	Chart 1, 2 for steady-shot adjustment
Measuring Point	Check the operations on the TV monitor
Measuring Instrument	
Adjustment Page	E
Adjustment Address	00 (a0 V SENSOR GAIN) 01 (a1 V SENSOR GAIN)

Perform steady-shot adjustment when angular velocity sensor has been replaced.

Note: Note down the sensitivity labeled on the angular velocity sensor (service part) together with the reference number (SE001 or SE002) of the angular velocity sensor replaced.

Adjustment method:

- 1) Adjust to the zoom TELE end.
- 2) Adjust the position of the unit so that the steady-shot adjustment chart 1 comes to the center of the monitor (top, bottom, left and right).
- 3) Release the protect.
Page: 6, address: 00, data: 01
- 4) Set data: 07 to page: E, address: 11.
(Check that the steady-shot adjustment chart 1 shifts upwards on the monitor TV.)
- 5) Input the video signal output when the data of 4) is changed from 08 to 07 into the oscilloscope and measure the amount of movement (Tv (ms)) of the black line.
- 6) Obtain Xv' (decimal number) using the sensor sensitivity (S2) of the angular velocity sensor attached to the SE102 on the SE board and the amount of movement (Tv) of the black line.
$$Xv' = \frac{1.62}{Tv (ms)} \times \frac{2.269}{S2} \times 151$$
- 7) Convert Xv' to a hexadecimal number and take it as Xv. (round up to a whole number)
- 8) Set data Xv to page: E, address: 00 and press the PAUSE button of the adjusting remote control unit.
- 9) Set data: 08 to page: E, address: 11.
- 10) The chart has been changed to "steady-shot adjustment chart 2".
- 11) Set data: 07 to page: E, address: 13.
(Check that the steady-shot adjustment chart 2 shifts to the left via the center.)
- 12) Input the video signal output when the data of 10) is changed from 08 to 07 into the oscilloscope and measure the amount of movement (Th (μs)) of the black line.

- 13) Obtain XH' (decimal number) using the sensor sensitivity (S1) of the angular velocity sensor attached to the SE101 on the SE board and the amount of movement (Th) of the black line.

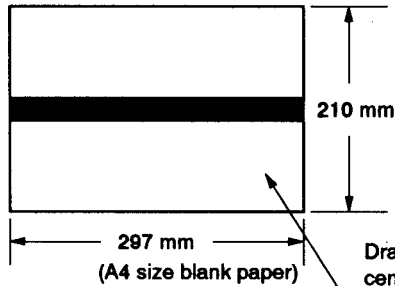
$$XH' = \frac{3.4}{Th (\mu s)} \times \frac{2.265}{S1} \times 152$$

- 14) Convert XH' to hexadecimal notation and obtain XH. (Round off to one decimal place)
- 15) Set data XH to page: E, address: 01 and press the PAUSE button of the adjusting remote control unit.
- 16) Set data: 08 to page: E, address: 13.

Preprocessing after completing adjustments

- 1) Set data: 10 to page: 6, address: 00.
- 2) Connect the TV monitor and check that image correction, against swinging, has been carried out properly.

steady-shot adjustment chart 1



Draw a black line at the center of a A4 size white paper by pasting black vinyl tape or using a black pen. The width of the tape or line drawn with the pen is free.

steady-shot adjustment chart 2

